

# THE IRON AGE

July 28, 1932

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G. H. GRIFFITHS, Secretary

C. S. BAUM, General Advertising Manager

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# THE IRON AGE

NEW YORK, JULY 28, 1932

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## Straight-Line Production of Refrigerator Cabinets

By F. L. PRENTISS

Cleveland Editor, The Iron Age

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L AID out for efficient and economical mass production, with an extensive system of conveying equipment and with floor space conserved to the fullest extent, a department for the manufacture of steel cabinets for electric refrigerators recently was placed in operation by the Westinghouse Electric & Mfg. Co., at its Mansfield, Ohio, works. Cabinets for various models are made in this plant in porcelain enamel and lacquer. Porcelain cabinets are made on the same assembly line as the lacquered models.

With a capacity of 570 cabinets in 24 hr., the department occupies a floor space of 80 x 420 ft. In this the parts are formed and the cabinet is fabricated, lacquered, assembled and crated. There are only two parts that are not made in the assembly department, the food compartment and the legs. These are made on the ground floor directly beneath.

Only a certain amount of floor space was available, and it was necessary to fit the department with the required capacity in that space and at the same time have the plant arranged for efficient operation. The plant, as laid out, is compact but not crowded.

### Work Moves in Straight Line

Work moves in a straight line, so far as practicable, from the metal fabricating department at one end to where the cabinets are crated at the opposite end. Work in process is kept on conveyors most of the time. Op-

THE Westinghouse Electric & Mfg. Co. recently inaugurated the manufacture of steel cabinets for electric refrigerators at its Mansfield, Ohio, works. A limited amount of floor space was available, but, through ingenuity in layout, overcrowding was avoided and operations were so synchronized as to insure a steady flow of work.

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erations are synchronized so that there is a steady flow of work.

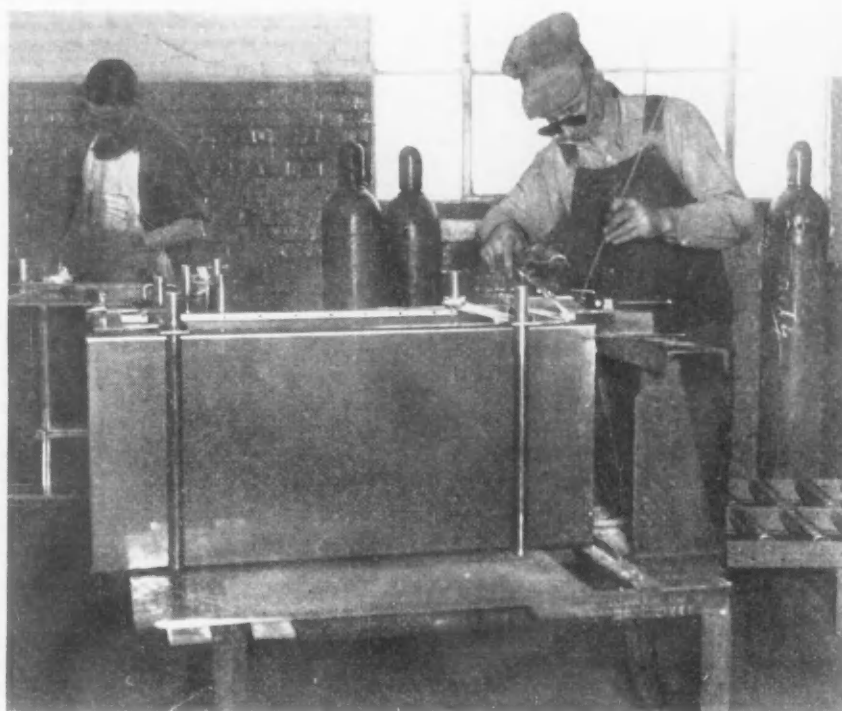
There is an overhead continuous chain conveyor, 1450 ft. long, which the shell and parts do not leave from the time the pieces are hung on the conveyor after cleaning until they reach the assembly line. They are given three spray coatings and are baked, dried and sanded all while in motion. There are hooks on the conveyor chain for carrying the work. Most of the final assembling is done on a power-driven slat-type conveyor, 190 ft. long, located a few inches above the floor. The assembly work is so arranged that an assembler does not travel more than 8 ft. in doing his portion of the work. Both the overhead chain conveyor and the final assembly conveyor travel at a fixed speed of 3.2 ft. per min. While in full operation a lacquered shell and its parts come off the overhead con-

veyor every 2½ min. and a finished cabinet leaves the assembly line at the same frequency. A shell put on the overhead conveyor for the first or priming coat is transformed into a cabinet ready for crating in 3¾ hr.

### How Cabinets Are Formed

Sheets for the manufacture of refrigerator cabinets are brought on railroad cars directly into the stock room where an overhead crane takes them to stock piles. There they are inspected for surface defects. A battery of ten shears of various sizes is located at one end of this room. The crane delivers the stock to the shears where it is cut to size. From here the sheets are trucked through an aisle to the stamping department in an adjoining building, on the second floor of which the refrigerator cabinet fabricating and assembly department is located. There are 38 presses of various sizes in the press shop for stamping parts for both refrigerators and ranges.

Sheets for the refrigerator boxes, after being punched, are taken to the upper floor on an elevator and are placed on skids—60 to 70 to a skid—on which they are moved to power-driven brakes with which they are flanged and folded to form the box. Only a narrow strip of metal extends over the front on each side, as the door fills most of the front. The formed shell is then placed in a fixture and a bottom cross-rail is brazed across the front to stiffen the box. Brazing is done with a bronze rod



After the outer shell for a refrigerator cabinet is formed the first operation is brazing a bottom cross-rail across the front of the box to provide stiffening. Brazing is done with a bronze rod. The metal base and upright steel poles comprise a fixture for squaring up the shell.

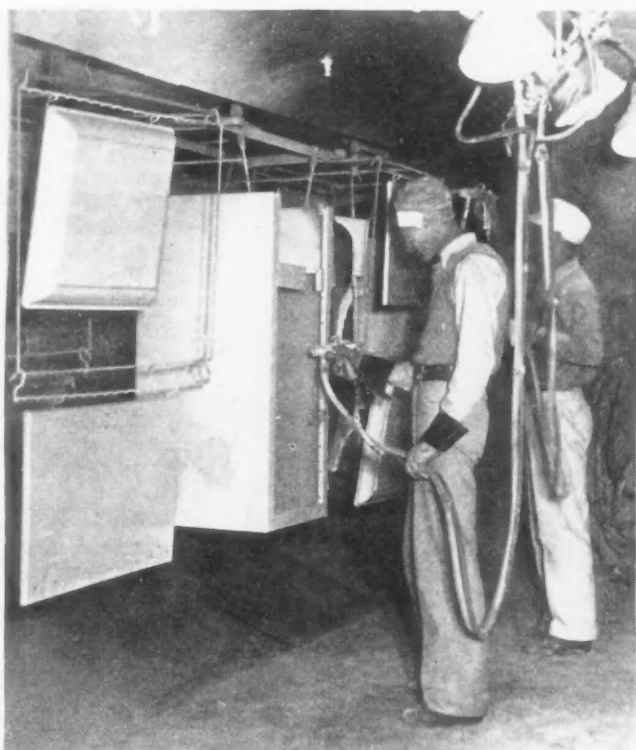
and torch. Roller conveyors just above the floor are provided for moving the shell to the various assembling operations that follow and in which parts are joined to the frame by spot welding. These include attaching hinge reinforcements and strike

plates, and welding in the top and bottom and shelf. In spot-welding the shelf to the frame, welds are made on the outside of the box through a thin strip of copper so that welding will not burn the metal and produce a rough surface.

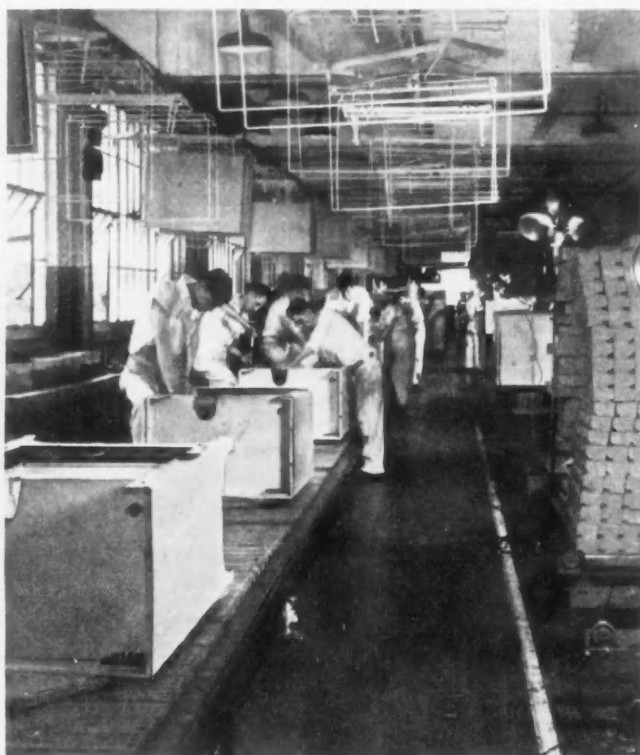
After the cabinets are assembled they move on a roller conveyor to one side of the adjoining inclosed metal-finishing room, where welds and corners are ground, burrs are removed, scratches are eliminated and holes are drilled. Various finishing operations are done with portable electric sanders, grinders and hand files. While the boxes are being finished they are set on turntables. These have foot control, allowing them to be rotated a quarter turn and then locked in position so that they will not move during operations. Boxes, after the finishing operations, are placed on a roller conveyor at the side of the room opposite from that on which they were received and move a few feet outside to a cleaning tank which is a part of the production line.

#### Boxes Cleaned in Vapor-Degreasing Tank

Boxes are cleaned by a vapor-degreasing process in a dip tank approximately 14 ft. long and 4 ft. wide. A liquid solvent known as Cevalene is placed in the bottom of the tank and vaporized. The cabinets are suspended in the tank and the vapor condenses on the cold surface of the metal and absorbs the oil and grease which are carried away as the solvent drains off the surface. The vapor rises in the tank to only the level of water-cooled condenser coils located around the sides and is condensed and the liquid returns to the bottom of the tank. The solvent is heated by steam coils located in the bottom of the tank. The work remains in the



**S**PRAYING the first finishing coat of white lacquer on the cabinets. A cabinet and its parts are hung side by side on the conveyor to assure uniformity of color on the finished refrigerator.



**T**HE beginning of the assembly line. Cabinets are taken from the overhead conveyor above, on which they have moved during successive operations, and after a few preliminary operations are set on the slat-type-driven conveyor on which assembling is done.





**C**ABINETS and parts (Above) while moving on the conveyor are rubbed down with sandpaper after the baking that follows the priming coat.

**A** VAPOR-DEGREASING process (At Left) is used for cleaning the cabinets, this being found efficient in that cleaning is done rapidly and equipment takes little space. The cleaning tank is located in the production line and the cabinets are handled in and out of the tank with an electric hoist.

tank 2½ min. The tank has a capacity for cleaning 50 cabinets an hour.

The cabinets are handled in and out of the tank by an electric hoist which, after cleaning, deposits them on a short roller conveyor. A similar cleaning outfit, but smaller in size, is provided for cleaning small parts that are to be lacquered. This method of cleaning is found to have economical advantages over the more common cleaning methods in that

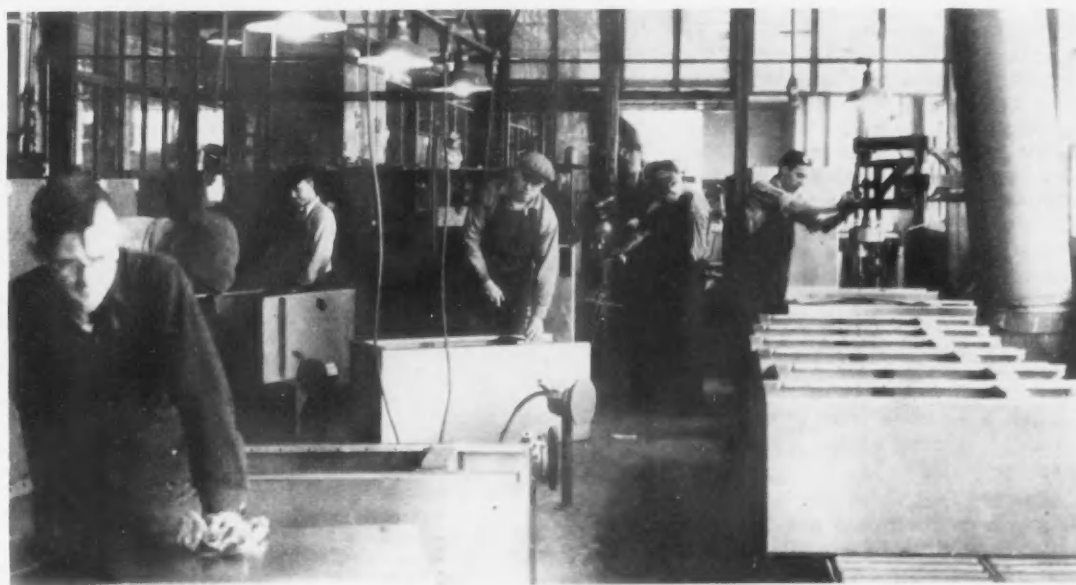
with only one tank the cleaning equipment takes less space and the speed of cleaning is increased. The cleaning process is that of the Carrier-York Corp., which supplied the equipment.

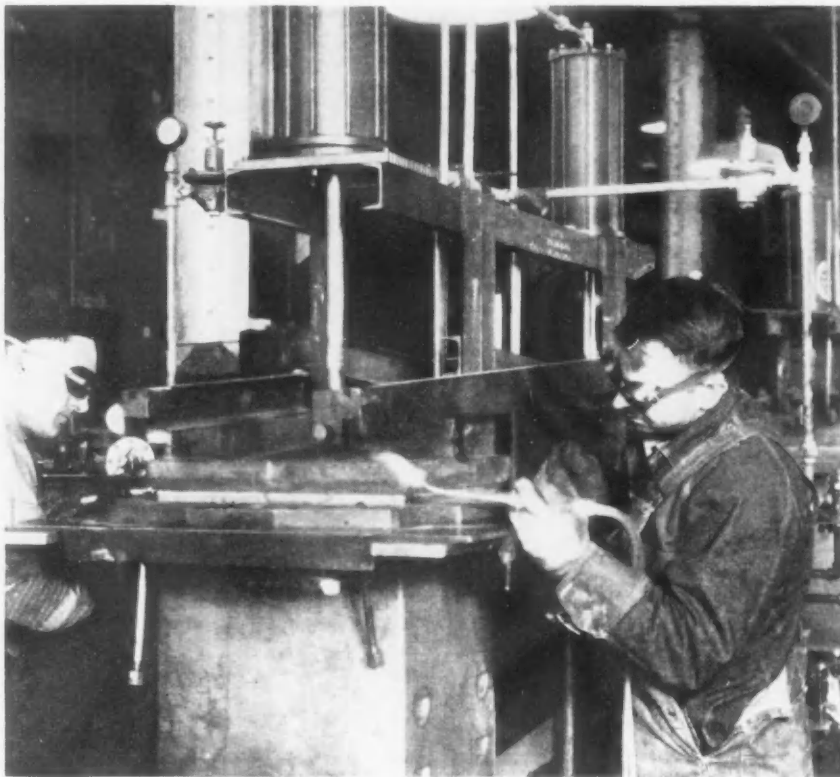
#### Priming Coat Applied While Shells Are in Motion

From the roller conveyor at the end of the cleaning tank the cabinets are hung on the overhead chain conveyor, which they do not leave until

they reach the assembly line. The first step in lacquering the cabinets is the application of an oil priming coat which is sprayed on both on the inside and outside of the shell, this being given to protect the metal from moisture. This coat is applied while the shells are in motion through a spray booth. Small parts are carried to the same booth on a short overhead conveyor that makes a circuit from the small cleaning tank. After the latter are sprayed they are sus-

**A**FTER assembly, various finishing operations are done on the cabinets, and, when completed, they are placed on a roller conveyor at the right and moved to the cleaning tank.





**T**OPS and bottoms of the food compartments are butt-welded to the sides. This method of joining the parts is being successfully employed with the use of a unique welding fixture, in which the pieces are firmly clamped in position for welding.

pended on the long conveyor, on which a cabinet and its parts are hung on adjoining hooks. This method of keeping the cabinet and its parts side by side during the lacquering operations assures uniformity in the color of the cabinet and the parts that are later attached to it. Otherwise, if there should be any slight variation in the color of the lacquer, parts lacquered at different times would not match.

The priming paint is drawn from a mixing tank on the roof three stories above to pressure tanks in the spray room and these serve the spray guns.

#### How Finishing Coats Are Applied

After the priming coat the conveyor carries the work through a U-shaped steam-heated baking oven about 140 ft. long. In this the priming coat is baked on at a temperature of 320 deg. F. It takes the work 67 min. to pass through this oven. The cabinets and parts, on leaving the baking oven and while moving on the conveyor, are rubbed down with sand paper to remove roughness and foreign substance from the painted surface. Then they go to a second booth in which the first coat of white lacquer is applied. The lacquer is supplied from tanks on the roof through a piping system in which it is kept in continuous circulation under pressure.

After the first white coat is sprayed the parts go through a drying room and are again rubbed down with sandpaper when needed, then going to

another spray booth for the finishing coat of lacquer, which is followed by a coat of thinner to give the cabinets a glossier surface. Then the work again goes through the drying room. Air is kept in circulation in this room and coils are provided for heating the room up to approximately 120 deg.

However, the work is often dried at ordinary room temperature.

The lacquered cabinets and parts, following the last drying, move on the conveyor to the front of the assembly line. Here the cabinets are taken off the overhead conveyor, put on a roller conveyor, and inspected, following which the legs are put on. The lacquered parts stay on the overhead conveyor which runs at the side of the assembly line to the opposite end of that line. Here the conveyor loops a short distance back over the assembly floor where the parts are removed for sub-assembling, which is done at points opposite the place on the assembly line where these parts will be affixed to the cabinet. The overhead conveyor, now empty, runs back alongside the assembly line to a point near the beginning of that line, where it makes a turn to the adjoining cleaning room and is reloaded.

#### The Final Assembly

Cabinets at the beginning of the assembly line are set on pedestals while an asphalt seal is being put in the top and bottom, and then are laid flat on a roller conveyor for the installation of the insulating material. From this conveyor the boxes are pushed on to the slat-type driven conveyor located a few inches above the floor on which the cabinets move for successive assembling operations.

Extending across the room at right angles to the assembly line are a series of tracks a few inches above the floor on which roller wheels are mounted. Food compartments and insulating material stored in the as-

(Concluded on Advertising Page 14)



**A** BOOTH 50 ft. long is used for spraying cabinets and other parts that are vitreous-enameled, the work being sprayed while being carried through the booth on a chain conveyor.



# Cadillac Profits From Educating Its Foremen Systematically

By BURNHAM FINNEY  
DETROIT EDITOR,  
THE IRON AGE

**T**HE part which foremen play in representing the management in the plant and in carrying out and interpreting the company's wishes to the rank and file of employees has long been recognized. Large and small companies alike accord the foreman the distinction of being "the key man of industry," and build their plans with this idea in mind. Nowhere has this management policy become more strongly rooted than in the Cadillac Motor Car Co., Detroit, which has a comprehensive program for the education of foremen.

To appreciate fully the importance which Cadillac attaches to this work, one must know its conception of what a successful organization must possess. The first requisite is that its employees be sound in body and alert of mind, but this alone is not sufficient. The men may have these qualifications and still fall far short of producing an automobile in the quality group which calls for unusual skill and precision in manufacture. The other necessary ingredient is a high morale which cannot be artificially created, but must spring from an understanding on the part of both the management and employees of

each other's problems and points of view.

It is at this point that the work which the company has done with its foremen looms large, for the meetings which have been held consistently since 1928 have done much to incul-

cate a more cooperative spirit and to increase the efficiency of foremen and the men under them. Whenever a special job is to be carried out, such as emphasizing the need for keeping the plant clean or increasing precautions against accidents, the machinery provided through the organization of the foremen is used effectively.

## Group Conferences Once a Week

**F**OREMEN meet once a week, in 10 groups of 22 persons each, for one hour during working hours. All classes are under the leadership of the personnel director and are conducted in the form of a round-table conference rather than a formal class gathering with the instructor doing all the talking. The foremen themselves participate actively in the discussion.

Text books prepared by the faculty of the General Motors Institute of Technology are used by the conference groups. They go into problems of management and economics, as indicated by titles of recent studies—"Departmental Management," "Factory Organization" and "Economics of Industry." One of the chief aims is to give foremen an opportunity to ac-

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**S**INCE 1928 foremen of the Cadillac Motor Car Co. have met weekly in 10 groups comprising 22 persons each to learn more about each other's problems, about economics in general and the company's business in particular. Round-table conferences are under the leadership of the personnel director; textbooks prepared by the General Motors Institute of Technology are used. Working through this trained group of foremen, the company has been successful in securing the cooperation of the rank and file of its workmen in carrying out many constructive enterprises, including a waste elimination campaign.  
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quaint themselves with the American industrial system and how it functions and specifically to give them an insight into the workings of General Motors Corp., of which Cadillac is a division.

One of the chief complaints made by critics of large companies is that one hand of a corporation does not know what the other hand is doing. That is, the production department is not familiar with the work of the accounting department and the stamping department often is unaware of the difficulties confronting the purchasing department. To overcome this handicap, which arises principally because of the company's size, Cadillac has provided a place on its foremen's conference programs for various department heads to describe to the men the duties of their organizations and the problems they must combat from day to day. This appearance of various officials, who submit to questioning after their talks, gives the foremen a feeling that they know these men and have some conception of what they do. For instance, Mr. Smith, head of the salvage department, is no longer merely a name to them. This procedure likewise brings home to the men the fact that they are all bound closely together by a common interest.

This purpose is aptly described by a Cadillac official: "We want to maintain an organization which is held together by common ties of tradition and aims. The best physical equipment a factory can provide will be of slight avail if the men are not inspired to give to their tasks the best they have. We want this spirit so to pervade our organization that if we were to move tomorrow with our entire force from Detroit to Oklahoma and had to build a plant from the ground up for the manufacture of our product, in a short time we would be turning out just as good a car as we are today."

#### How Management Campaigns Are Aided

**I**N order to determine the most appropriate subject for the week, a master conference is held prior to the first of the foremen's group meetings. This is attended by the works manager, factory manager and superintendents of the manufacturing divisions, each of whom has supervision of a number of foremen. Like the foremen's conferences, it is conducted by the personnel director.

Although it has been found beneficial to follow a planned course of study, deviations from the regular program sometimes are advisable. For example, the Cadillac company this year has conducted a campaign to eliminate wasteful manufacturing practices and to reduce spoilage, with a sizeable financial saving as a goal. In putting this campaign into motion, the company knew that its success depended largely on the cooperation of

its 220 foremen. What was more natural than to devote one of the foremen's weekly round-table conferences to an explanation of the campaign and its objectives, with the foremen asked to make suggestions of ways and means by which the goal might be attained? Thus their interest was enlisted at the start and the campaign has been an outstanding success.

Emphasis is put on starting the foremen's meetings on time and ending them promptly at the expiration of one hour. In this way there is no opportunity for a session to lag in interest and foremen are away from their posts in their own departments the same amount of time each week.

This regularity, with total absence of delays, increases efficiency.

Summarizing the foremen training program, a Cadillac official said: "At these gatherings, the foremen exchange ideas to the advantage of all. In addition, authorities on various subjects deliver lectures. At Cadillac there is no executive too important or too busy to attend and address these meetings. Cadillac not only wants its men to do quality work, but also wants them to know why they do their jobs in a certain way, for we feel that if they have a thorough understanding of the business as a whole, they will be able to do better work."

## Develops New Methods of Decorating Rustless Steel

**T**HE use of decorated metals to add to the attractiveness of interiors of buildings has become more general in the past year or two. Panels etched and lacquered to produce attractive designs and figures provide a pleasing effect when used in lobbies of buildings, on doors, on elevator inclosures and in other places for interior work where artistic appearance is desired.

#### A Process That Dispenses with Etching

High nickel-chrome alloy steel has recently come in use for decorative panels, the bright polished surface making this steel readily adaptable for this purpose. Recent laboratory work conducted by the United Metal Products Co., Canton, Ohio, has led

to interesting developments in the art of decorating the new high nickel-chrome alloys. A method of decorating these steels without the use of the etching process has been developed and is now being applied commercially. Advantages claimed for this process are that it is much cheaper than etching and more effective. The application of this process is quite simple.

A chrome-nickel sheet with a Tompico or other smooth finish is used for the panel. A stencil made of copper of the design to be reproduced is placed over the sheet. Then the metal exposed by the stencil is spray-painted, usually with three coats of lacquer, which is baked about 30 min. after each spraying. The sheet is then placed under Tompico brushes which produce a dull satiny finish on all the surface that is not protected by the paint—the part that becomes a background for the figures. In spraying, a black coat, then a gray coat and finally another black coat is applied. When the first two coats are rubbed off under the action of the polishing brushes and only the first black coat is left on the metal, that is a warning to the polisher to cease brushing.

Instead of making panels separately, work is speeded up by stenciling a number of panels end for end on a long strip so that all the panels on the strip may be brushed in one operation, after which the panels are sheared from the piece. After brushing, the protective coating remaining on the panel is removed with a special paint remover and the piece is polished with whiting. When the panel is finished, the design stands out clearly and with sharp lines in a mirror or other bright finish, with the dull, satiny finish background that provides a pleasing contrast. In this

(Concluded on advertising page 16)





# Steel Costs—How They Have Been Raised by Tax and Freight Increases

By W. W. MACON  
Consulting Editor, The Iron Age

FURTHER facts relative to the cost of making steel have been obtained since the publication in THE IRON AGE of June 23 of the cost figures of one of the country's larger steel plants. These later data do not show costs relatively as high as those then reported but they do show a disproportionateness as between today's costs and those of pre-war days and the corresponding prices secured for the steel.

For example, an accompanying table gives costs of making steel bars, plates and structural shapes, comparing the first quarter of this year with 1915, as was done in the earlier article. The total cost was 50 per cent above that of 1915, whereas prices were only 14½ per cent higher, —bars, plates and shapes selling for 1.31c, a lb. (average) in 1915 and 1.50c, in the first three months of 1932. What the ton-cost might be if bond interest, depreciation or Federal taxes were included is left to conjecture.

This tabulation does not give the transportation item separately as the cost analysis of June 23 did, but instead the freight charges are included in the costs of both material and fuel.

Nor does it set apart all the labor charges but only those required for the actual work of production and repairs, the other labor costs being merged in the material and fuel figures.

A second table has been compiled from detailed information obtained from still another company and one of large size. This gives a line on the extra costs that have had to be met today by this producer in the matter of freight charges alone. The table shows the tonnages of various materials that are required to make 1 ton of finished steel of the heavy category, such as plates, shapes and bars. For each kind or class of material the freight costs of both 1913 and 1932 have been listed. The ratios of the increase in the rates are given in the fourth column of the table. In many cases the rates are now over twice what they were in 1913. Few items were overlooked, even the amount expended on hauling fuel for the works locomotives being included.

The table shows that in making 1 ton of the finished steel some 4.864 tons of materials had to be handled. Also, that against a general transportation and handling expense of

\$7.02 in 1913 for every ton of finished steel, there is now a charge of \$12.55, or 1.788 times as much. The only assumption in this calculation is that the same practice and the same relative amounts of materials obtained in 1913 as did in 1932.

The records of another company touching on the cost of assembling materials are that current charges are 53 per cent more than those of 1914. Transportation showed a 51 per cent increase in the plant whose costs were discussed in the issue of June 23.

## Coal and Iron Mine Taxation

The element of taxes has not been covered in these analyses. Its effect on the cost per ton is highly variable, but that it is high even without regard to low rates of operation is generally admitted. Property taxes in the case of three separate plants show that today the companies are paying 2½ to 3½ times as much as in 1914, the increases for these three being 172, 143 and 258 per cent.

Taxation has been particularly arduous in the case of coal and iron mines. The confiscatory character of mine taxation in Minnesota has been discussed several times recently in these columns. The valuation of the ore in the ground, taking one of the Minnesota mines as an example, was 14c. per ton in 1910 and 27.9c. in 1930, an increase of 99.28 per cent, or substantially double. Meanwhile the tax rate is over eight times what it was in 1910, the rate being 16.9 mills in the earlier year and 135.9 mills in 1930, an increase of 704 per cent.

The story of coal mine valuation in Pennsylvania is similar. In 1910, a typical valuation was \$450 per acre and in 1930, \$825 per acre, an increase in valuation of 83.33 per cent. The tax rate in the same time was quadrupled, being 13.5 mills in 1910 and 54 mills in 1930, an increase of 300 per cent.

Enough has been presented to indicate what the steel producer has been contending with to keep down costs. It would not take a lively imagination to conjure up the heights to which unit costs would rise if the items of overhead, bond interest, fixed royalties on mining properties, and the like were considered, especially at the present levels of operating activity.

## COST OF BARS, PLATES AND SHAPES

	1915		First Quarter 1932		Ratio of Increase
	Per Gross Ton	Per Cent of Total	Per Gross Ton	Per Cent of Total	
Material (incl. labor and transportation).....	16.26	49.6	11.72	37.9	1.15
Fuel (incl. labor and transportation).....	2.27	19.5	4.81	15.6	2.12
Labor (producing and repairing).....	3.20	15.4	6.18	29.0	1.93
Other (incl. administrative).....	5.14	24.7	8.19	26.5	1.59
Total.....	26.81	100.0	30.90	100.0	1.48

## Transportation Costs in Assembling Materials Required to Make 1 Net Ton Heavy Finished Steel in Plant Comprising Coke Ovens, Blast Furnaces, Open-Hearth Furnaces and Blooming, Billet and Finishing Mills

	Tons	Freight Rate Per Ton, 1913	Freight Cost, 1913	Ratio 1932 Rate to 1913 Rate	Freight Cost, 1932
Coking coal.....	0.795	\$6.85	\$5.68	1.741	\$1.18
Steam coal.....	0.790	1.80	1.42	1.59	2.12
Fuel (coal equiv.).....	0.420	1.40	.59	2.077	1.22
Locomotive coal.....	0.023	.70	.02	2.0	.04
Coke breeze.....	0.010	1.20	.01	1.942	.02
Ore.....	0.940	1.56	1.47	1.618	2.38
Iron and steel scrap.....	1.230	1.65	2.03	2.046	4.15
Total additions.....	0.012	2.17	.03	1.861	.05
Limestone, fluorspar, etc.....	0.490	1.20	.59	1.712	1.01
Refractories, brick, clay, dolomite, loam, etc.....	0.105	1.25	.13	2.06	.27
Furnace rebuilding material.....	0.026	1.00	.03	1.34	.06
Molds and stools.....	0.021	.40	.01	2.05	.02
Sulphuric acid.....	0.006	1.18	.01	2.12	.02
	4.868		\$7.02		\$12.55
Scrap produced.....	0.252				

# Finishing of Rolls by Grinding—III

By Carl Morey

Consulting Engineer, Big Rapids, Mich.

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As stated previously, the mechanism by which the crown or concave curve of a roll is generated is the most special confronting the designer. There have been many types designed with outstanding characteristics, all of which have met with more or less success.

In considering these curves it is well to reconsider the nature of the ideal curves.

Since a roll is crowned to compensate for deflection, it must be acknowledged that the elastic curve for uniform load is ideal.

Concaved rolls are used for hot rolling. It is easily understood that the contact between the hot metal and the roll will transmit more heat to the middle portion of the roll than near the necks. Naturally, the roll body will expand more at the middle than at the ends, since means frequently are provided for cooling the necks. As stated previously, the concave curve becomes very complex, though it approaches the harmonic in general form. Since it is more or less indeterminate, and since manufacturing limits on hot rolling are relatively wide, the rule-of-thumb methods (straight-edge and roll crosses) were satisfactory.

Some builders use exactly the same curve for both crown and concave, except that in one case it is crowned and the other concaved.

## Simple Harmonic Curve Close to Elastic Curve

It can be shown that the simple harmonic curve is close enough to the

**D**ISCUSSION of roll grinder crowning mechanisms is continued in this third article. As a basis of their crown generating method, several roll grinder builders use the simple harmonic curve, said to be close enough to the elastic curve for all practical purposes. The adjustable crank, eccentric and former, the sine bar and heart-shaped cam designs employed in crowning and concaving are briefly outlined. The previous articles appeared in THE IRON AGE of June 30, page 1388, and July 14, page 54.

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elastic curve for all practical purposes. Since it so happens that the harmonic curve can be generated by a simple crank motion, this forms a very logical reason why several builders have adopted this method of crowning. The designs include an adjustable crank, an adjustable eccentric, and several eccentrics of varying throws. Change gears are usually required, to allow for varying roll lengths.

In addition to the eccentric, several others are used at present. They include the adjustable "former," the so-called "sine bar," the heart-shaped cam, and the double eccentric.

The adjustable former is interest-

ing, since any desired curve can be produced. It consists of a bar supported on a series of jacks arranged to deflect the bar to the desired curve. Fig. 13 shows this device.

The sine-bar method incorporates a swivel table on which the roll is rotated. As the roll passes the stationary wheel, the table is swung slightly, causing a curve to be generated by the wheel. A comparison between the sine-bar curve and the elastic shows that the sine-bar curve does not deviate materially from the ideal.

The heart-shaped cam was developed in the same manner as the fixed-curve former, that is, by designing the cam to match a tested roll. It is therefore perfect for one particular crown or concave and a particular roll length.

Change gears are necessary for various magnitudes of crown or concave and roll length.

## Double Eccentric Developed to Eliminate Change Gears

The double eccentric was developed with the idea of eliminating change gears, and also for producing a curve more nearly that of the ideal. Within the range of the design, say from 0 to 150 in. length of roll, it is not necessary to use change gears. Ordinarily, a wider range of operation is not necessary in one machine; but, should a wider range be required, one set of change gears would cover a range far beyond any roll yet built. Due to the peculiar action of the double-eccentric type, the curve pro-

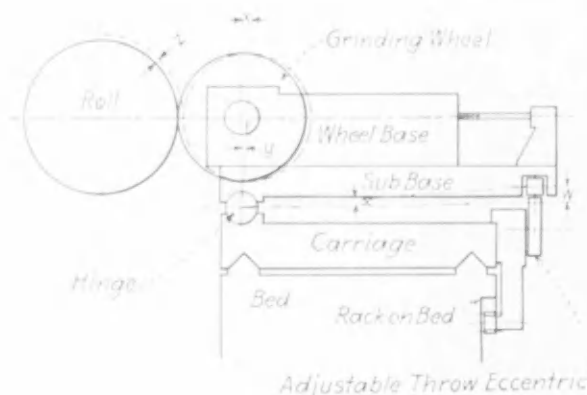


FIG. 14a

Fig. 14a—Arrangement using a single eccentric for tilting the wheel-base.

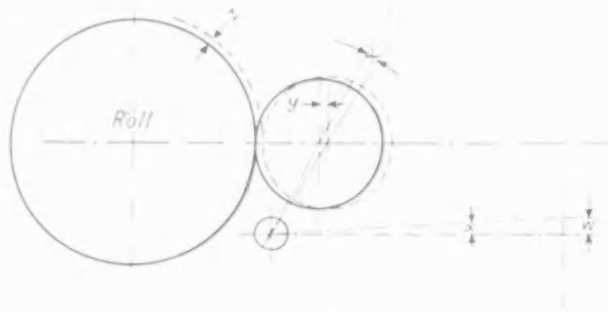


FIG. 14b

Fig. 14b—Effect produced by a difference in the nominal diameter of the work.

duced is substantially the elastic curve. It is uniform for both crown and concave, and is adjustable by means of dials on the rear of the wheel-base. One feature found in this device is that gear backlash is completely eliminated. The pressure is always on the same side of the gear teeth, whether crowning or concaving, or traveling to the right or left.

In building a crowning mechanism, long shafts, lots of gears, sliding keys, splines, etc., should be avoided, as a very small "wind up" in the mechanism will disrupt the most careful calculations.

#### Single Eccentric for Tilting the Wheel-Base

Figs. 14a and b show an accepted arrangement using a single eccentric for tilting the wheel-base. Fig. 14a shows the general idea, while Fig. 14b indicates the effect produced by a difference in the nominal diameter of the work.

It will be readily seen that in Fig. 14a the angle  $X$  represents the total lift of the eccentric for this particular condition. It will be noted, by comparing figures, that a change in the position of the wheel-base causes distance  $Y$  to change. It therefore follows that the magnitude of the crown varies with the nominal diameter of the work.

In this arrangement the wheel-base is hinged at the front end. The unit is substantially a bellcrank, the wheel being moved directly in and out relative to the work as the rear portion is raised and lowered by the eccentric. The value  $Z$  indicates the highest point of the crown on the roll. The

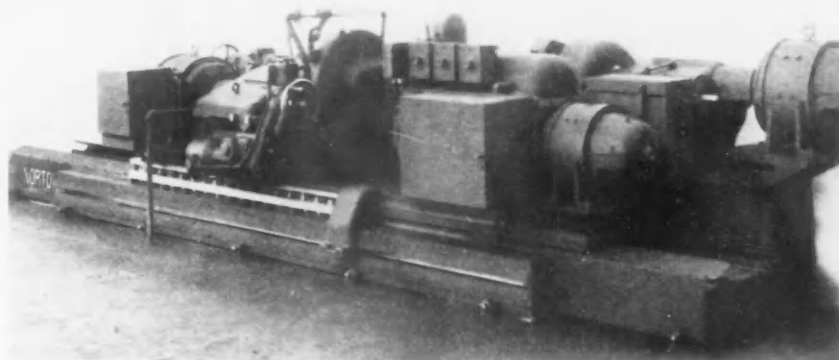


Fig. 13—Traversing wheel-base roll grinder using the adjustable bar "former" for crowning.

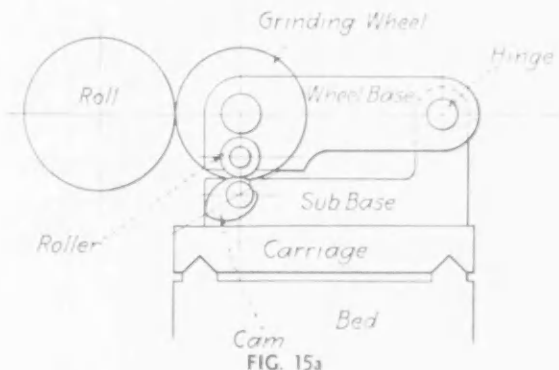
drive for the eccentric is derived from the rack mounted on the bed of the machine.

Figs. 15a and b show the application of the heart-shaped cam. It will be seen that the wheel-base is hinged at the rear, the wheel being moved substantially tangentially to the roll. This arrangement allows for considerable lift for a small amount of crown. It has the same effect as the unequal-arm bellcrank arrangement previously described. The heart-shaped cam is mounted on a sub-base, and moves with the whole base. Therefore, the movement is correct for all nominal roll sizes. For crowning, the wheel-base is raised above the centerline of the roll, and for concaving it drops below. Therefore, it is necessary to design the cam for the two operations, one side for crowning, and the other for concaving.

Change gears are used for different magnitudes of crown or concavity and different roll lengths. In

setting the device, since the drive is continuous, the crown is set at the middle of the roll body while the concavity is set at the end of the roll. In actual operation, however, the wheel starts its cut at the ends of the roll for crown, and at the middle of the roll for concavity.

Fig. 16 shows the general arrangement of the double-eccentric type of mechanism. As in Fig. 14a, the wheel-base is of bellcrank type with the hinge at the front, the mechanism raising the rear portion. Like Fig. 15a, the sub-base slides for different size rolls, and the relation of component parts of the mechanism does not change. The eccentrics operate in unison, and rotate in the same direction. To adjust the device for different roll lengths and crowns, it is necessary to change the relative lead. Practically any form of curve can be designed into this arrangement, the hinge point  $A$  describing anything from a perfect circle to a straight line.



Figs. 15a and 15b—Application of heart-shaped cam.

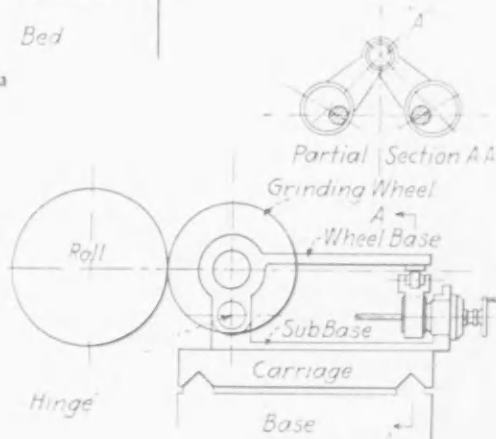
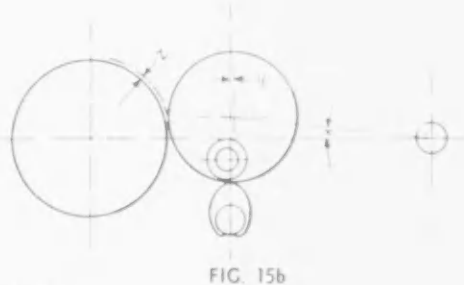


FIG. 16

Fig. 16—General arrangement of double-eccentric type mechanism.



# Oil-Electric Locomotives in Plant Switching Work

By C. A. FIKE

Superintendent, Plant Transportation Department  
Westinghouse Electric & Mfg. Co.,  
East Pittsburgh

AT the East Pittsburgh works of the Westinghouse Electric & Mfg. Co., which is scattered over considerable acreage, the plant railroad has become an intra-plant material handling unit as well as the medium for incoming and outgoing shipments. This is the case in steel plants as well as in other large industrial layouts, and a yard shifting department, in charge of a yardmaster with necessary assistants, clerks and weighers, along with regular railroad and maintenance crews, is required to take care of the work. The costs, even under the most favorable circumstances, are high because of the large investment in trackage and rolling stock with the attendant maintenance equipment such as coal-tipple, ash-pit, water-tower, repair pits, etc., as well as because of the skilled personnel necessary to handle the work.

In an endeavor to decrease costs, the Westinghouse company in 1928 decided to try oil-electric locomotives in place of steam power, and extensive studies on the possible savings that would accrue were made. The first unit, a 55-ton, 300-hp. locomotive, was placed in service in January, 1929. This unit was worked in direct daily comparison with five steam locomotives, four 60-ton and one 79-ton unit, and many problems came to light.

## Personnel and Maintenance Reduced

Personnel was a problem, as old railroaders resented any possible reduction in their importance or number, and it was readily seen that this engine would reduce the operating and maintenance crews. The fireman was unnecessary and with the absence of fires to clean, boilers to wash, etc., the hostling force was eliminated. To overcome this personnel prejudice one of the brightest engineers was picked to run the locomotive and effort was made to win him over to the advantages of the new motive power.

To insure safety in operation over the yard system of 11 miles of track with many bad curves and blind corners, a dual system of control was installed. This allowed the engine to be operated from either side, the en-

## Monthly Report on Oil-Electric Locomotive Costs for May, 1931

Locomotive Number	7	8	9
Hours Operated	275	293	379
Wages, Engineer	\$247.50	\$266.37	\$341.10
Wages, Fireman			
Wages, Hostler	22.72	23.79	23.79
Overhead Supv.	54.04	58.03	72.98
Fuel	61.38	71.04	92.16
Water	.10	.10	.10
Lubricating Oil	68.75	33.00	18.75
Maintenance	57.32	29.54	10.12
Depreciation	312.51	353.25	328.81
Insurance	3.13	3.53	3.29
Total Cost	\$827.45	\$838.65	\$886.10
Average Cost Per Hour	3.01	2.86	2.34

gineer merely stepping from one side of the cab to the other as necessary, and as the control handles worked in conjunction there was no lost motion or time involved. In connection with the dual control a safety switch or "dead-man control" was incorporated, so that if for any reason the engine-man should become incapacitated the

engine would automatically stop and the brakes be applied.

Another favorable item was that of maintenance. Steam locomotives demanded 24-hour hostler service, whether or not they were working. Machinery and boiler maintenance required a regular repair force of three men, augmented occasionally by additional help when some particularly heavy job, such as tire replacement or tube renewal, had to be done in a hurry. At intervals of five or six years, each steam locomotive fire box had to be replaced, a major repair running into some thousands of dollars. With the oil-electric unit hostling service is unnecessary, a weekly inspection of the entire unit involving but a few hours' work. No boilers or tubes are present and engine wearing parts are easily and quickly replaceable as a unit, the same holding true for the electrical and control parts. The heaviest major repair is that of

(Concluded on advertising page 14)



One of the new oil-electric locomotives in service in the yards of the East Pittsburgh works of the Westinghouse Electric & Mfg. Co., pictured with one of the old steam locomotives which it replaced at a saving of \$3.91 per hr. of engine work.



# Special Furnace Bright-Anneals Copper Wire in Steam Atmosphere

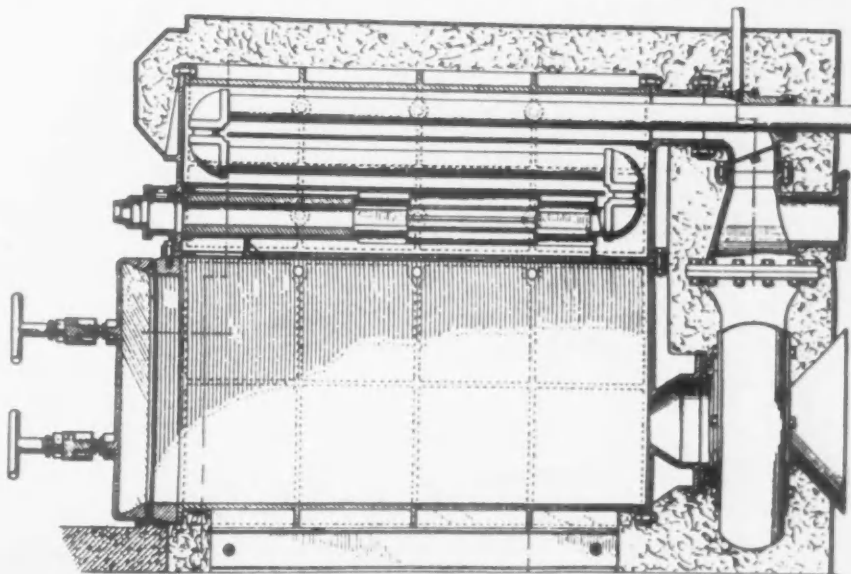
BY J. B. NEALEY  
American Gas Association

THE constantly recurring problem of bright-annealing copper wire has finally been solved by the use of an entirely new principle with gas as fuel. A specially designed furnace has been operated for over two years in which the necessary heat is applied to the work by convection of steam, which is chemically inert with respect to the product. This furnace has a high thermal efficiency and anneals the product with uniform ductility, free from discoloration and objectionable oxidation. With slight variations in temperature, the ductility of the annealed wire can be made from 25 to 40 per cent greater than the code requirements. The idea was conceived and executed by S. B. Gamble, industrial gas engineer of the Public Service Co. of Northern Illinois, and S. M. Berolzheimer, chief engineer of the Diamond Braiding Mills.

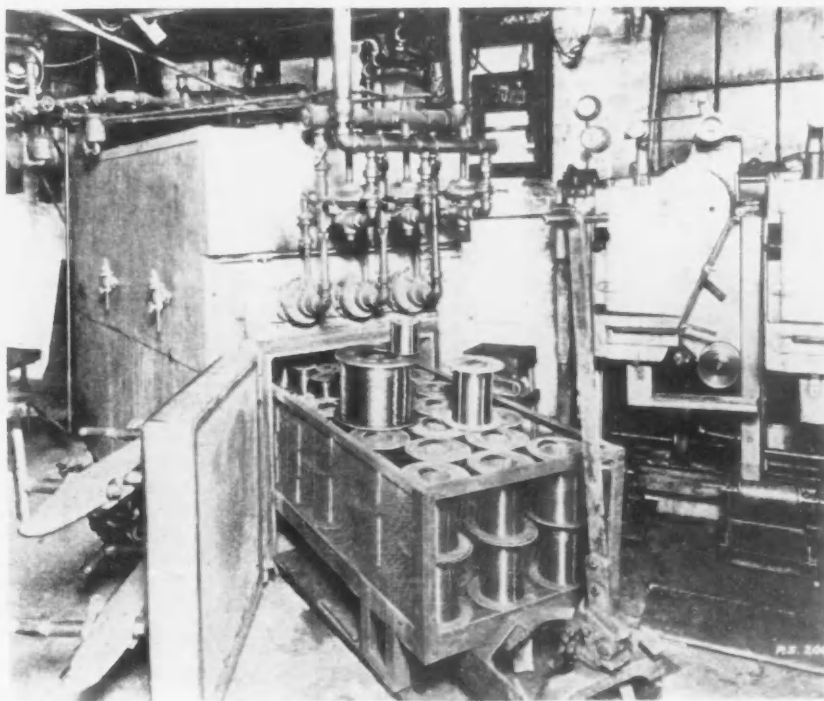
The furnace was installed because bright-annealed copper wire purchased in the open market varied so much in ductility that it was difficult to control subsequent processing. At least

this was the experience of the Diamond Braiding Mills, Chicago Heights, Ill., probably the only insulated wire plant in the United States which man-

ufactures everything that goes into its product under one roof. This company makes a complete line of the smaller sizes of insulated, flexible,



CROSS-SECTION of side elevation of special annealer, showing steam superheater, annealing chamber, circulating fan, etc.



FRONT view of annealer showing potentiometer in background, also proportional mixing gas burners. (Wire-drawing machines at extreme right in foreground). Note large and small spools and different sizes of wires in same load.

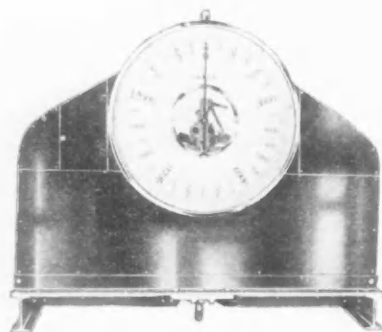
electrical wire consisting of cords for lamps, heaters, vacuum cleaners, electric irons, toasters, hot plates, etc.; tensile cords for curling irons and hair clippers; all-rubber, portable cords for electrical tools and office appliances; heat-resisting fixture wire; and asbestos insulated wire. Practically all of these are manufactured to the specifications of the Underwriters Laboratories and bear their label. Complete cord assemblies are made up for the appliance manufacturers. This company also makes a great variety of stranded and braided copper wire products, such as pigtail wire and braided copper for movable switch connections. It was in the stranding processes that the trouble centered; so the management decided to install its own copper wire drawing department. This necessitated provision of the annealing equipment.

A corollary object of the design of furnace adopted was to permit skid loading so that a skid load of spools (Concluded on advertising page 16)

## Crane Scale Weighs While Load Is Lifted or Conveyed

WITH the crane scale illustrated, which is a product of the Kron Co., Bridgeport, Conn., loads may be weighed while being lifted or conveyed by cranes, hoists, tramrails or other overhead transportation systems.

The unit is placed in the lifting line and becomes part of the line itself. It indicates the weight of the load on a large dial as soon as the



load is lifted clear of its support, and continues to do so until the load has been deposited at its destination. In addition to eliminating extra handling for the weighing operation, this type of scale clears, for other uses, parts of the floor formerly required for weighing with floor scales, and does away with the need for different types of scales for different materials. It is offered for use in connection with handling and weighing of structural and other rolled steel, pig iron, scrap, wire, forgings, castings and other material.

The frame of the scale houses a simplified lever system with a minimum number of bearing points, and is made of heavy steel plate with channel reinforcing. It is designed to support a load many times greater than the weighing capacity of the scale. The dial mechanism provides one-point adjustment, which simplifies and speeds up adjustment when necessary, and permits the tester to locate and seal every graduation point from zero to capacity. A tare beam adjustment inside the frame permits the balancing off of sling chains, etc., to give a net reading on the dial.

A sector design is such as to offset vibration of the scale or load, eliminating vibration of the pointer. The number of bearing points in the dial mechanism has been reduced to six. These pivot points are ball bearings of high accuracy, and each bearing is sealed in a dust-proof housing. Lever and dial mechanism is designed to withstand the same shocks, jerks and hard usage given to chains, cables, etc., employed in the lifting system

without effect on its accuracy or sensitivity. Although the weighing mechanism is constructed to support many times the capacity of the scale, an additional safety device serves to transfer the weight of the load to the frame, independent of the weighing mechanism, in case of failure of the latter.

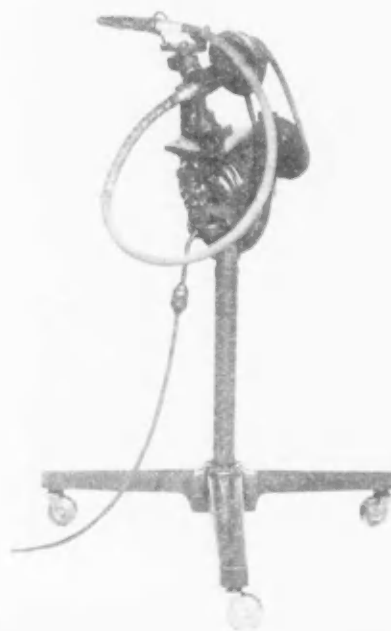
Two types of this crane scale are made, regular and low-head, respectively. Capacities range from 750 to 50,000 lb.

## Announces New Die Sinker

FOR die work, rotary filing, grinding, polishing, drilling, sanding and other operations in die, pattern and machine shops, the Binghamton Flexible Shaft Co., Johnson City, N. Y., has brought out a new four-speed, V-belt drive, tilting and swivel type die sinker. Both pedestal and bench types are made.

Features emphasized are the ease with which the tool conforms to every angle required, and the increased life of the flexible shaft itself due to the combination ball-bearing swivel and yoke-type suspension. The machine is powered by a  $\frac{1}{4}$ -hp. 1725-r.p.m. ball-bearing motor. Two sets of speeds, 900 to 3800 r.p.m. and 1800 to 7600 r.p.m., respectively, are available. Countershaft and hand-pieces are full ball bearing.

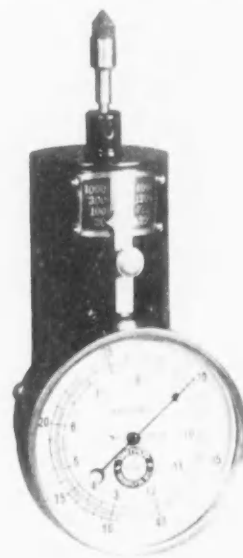
The flexible shaft is 4 ft. long. It



is made with a  $\frac{5}{16}$ -in. diameter core and with either a metal or a rubber case, the outside diameter of which is 1 in. Attachments include extra collets for the hand-piece, grinding wheels, wire brushes, cotton buffs, wheel arbors, cone-shaped emery wheels and mandrel, and a wide variety of rotary files.

## Automatic Fixed Reading Tachometer

AUTOMATIC fixed reading, whereby the speed indicating pointer remains locked on the dial each time the tachometer is used, rather than drop-



ping back to zero when the instrument is removed from the shaft of which the speed of which is being taken, is a feature of the new hand tachometer recently placed on the market by the Amthor Instrument Co., 309 Johnson Street, Brooklyn, N. Y.

With the exact reading fixed on the dial, the necessity for memorizing the reading is eliminated; and since it is unnecessary to keep the eyes focused on the dial, the tachometer may be used in the dark or in places where it is difficult to hold and to read the instrument at the same time.

The dial is graduated to read directly in r.p.m., but the instrument is equipped so that surface ft. per min. and belt speeds can be taken. There are four speed ranges, each of which is separately read over the entire circumference of the dial. This is emphasized as giving a great deal more graduation space and, consequently, closer readings. Each instrument is constructed with a properly balanced cross pendulum governor movement, is hand calibrated for accuracy and is dead beat in action. Various ranges can be had to directly measure speeds as high as 12,000 r.p.m.

# Automatic Gang Press Produces Drawn Parts from Coiled Stock

**I**NTRICATE drawn parts are produced automatically from strip or coiled material on the gang press illustrated, several sizes of which are being offered to the stamping and drawing trade by the Schatz Mfg. Co., Poughkeepsie, N. Y. Various numbers of tool stations can be provided for producing finishing parts at speeds up to 60 parts a minute.

The object of the gang press is to consolidate the work done by several presses and operators into one machine and one operator, with automatic precision feed, and thereby effect substantial production economies.

Strip or coiled material is fed to the machine at a right angle from the rear. The blank is stamped out in the first operation, then moved by means of a mechanical pusher to the first forming die, after which the part is carried from die to die by suitable transport grips that move from left to right and right to left with an opening and closing movement as well. The finished part drops into a chute and then into a container at the right-hand side of the machine. Even two bands of material can be fed for making laminated parts, as, for example, a certain type of automobile hub cap made up of steel and Nirosa metal. Machines have been designed

with as many as 12 tool stations, although that is not the limit of possibility. After the blanking operation, the scrap material is cut into small pieces and falls from the chute X, Fig. 1, into a container.

Fig. 2 shows the new feeding mechanism designed to actuate the transport grips and the rolls that feed the material. Slide A, attached to yoke C, is raised and lowered by cam B, thus moving the grips back and forth. The transport grips open and close automatically; this movement can also be obtained by means of a hand lever when the press is idle. The length of material feed at the feed rolls is adjustable by a spindle at eccentric D. When necessary, straightening rolls are furnished in front of the feed rolls, as well as take-off rolls combined with a scrap shear.

Feed-rolls, take-off rolls and scrap shear can be had collapsible and demountable, if desired, and the machine otherwise arranged for use as a plain wide-bed press with adjustable slide and special bolster for attaching the tools. Each tool holder is individually adjustable, with positive ejector arrangement by means of rollers.

The three sets of tools shown at the base of the machine in Fig. 1 are for making three sizes of ball retainers



or cages from coiled material to finished part. In the foreground can be seen each stage of the six operations required to form this intricate part. A deep drawn cup produced in seven operations is shown in Fig. 3.

Long life with accuracy is attributed to careful selection of materials, which are hardened and ground where necessary, and to accurate workmanship. The clutch is of multiple friction disk type, with brake, so that the slide can be stopped in any point of its travel. The unusually long guides have multiple tapered gibs with one screw adjustment to take up wear. The frame is solidly tied together with four hot shrunk steel tie-rods, which in themselves take up the rated pressure of the press. Slide and bed are of ample dimensions. The eccentric shaft is forged, hardened and ground. Bearings are of bronze. Lubrication is by central greasing station or vacuum cups.

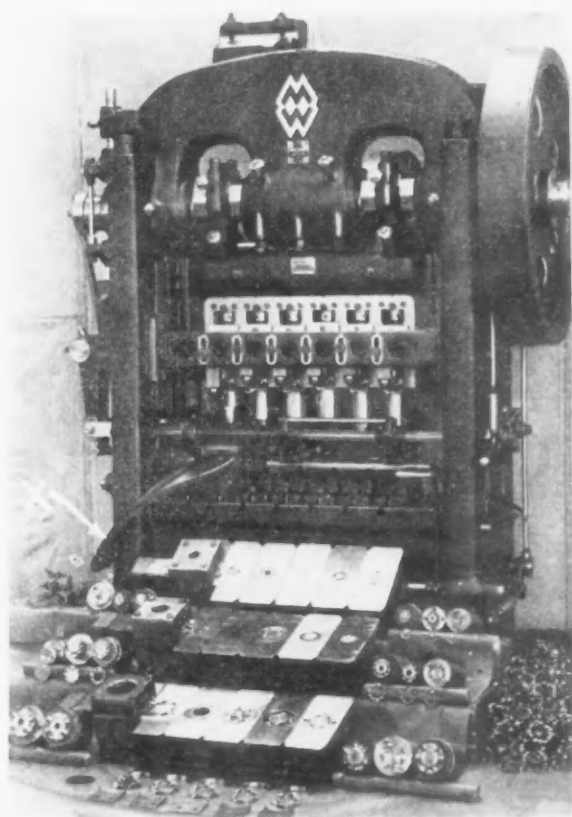
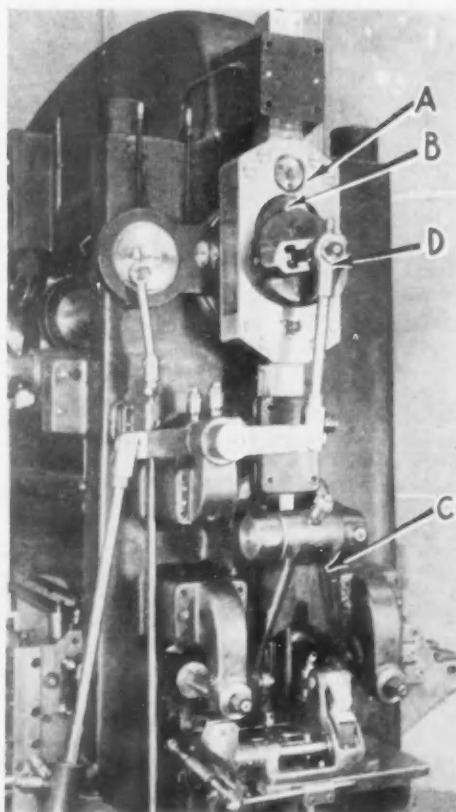


Fig. 1 (at left)—After the blanking operation, the scrap is cut into small pieces and falls from the chute into a container. The blank is moved by a mechanical pusher to the first forming die, then carried from die to die by means of transport grips. The three sets of tools shown at the base of the machine are used for making three sizes of ball retainers, or cages, from coiled material.

Fig. 2 (at right)—Feeding mechanism designed to actuate the transport grips and the material-feed rolls. The transport grips open and close automatically, but can also be moved by hand lever when the press is idle.

Fig. 3—(top of page)—This deep-drawn cup is produced in seven operations.





# Milling, Drilling and Burnishing Operations on the Ford V-8 Block

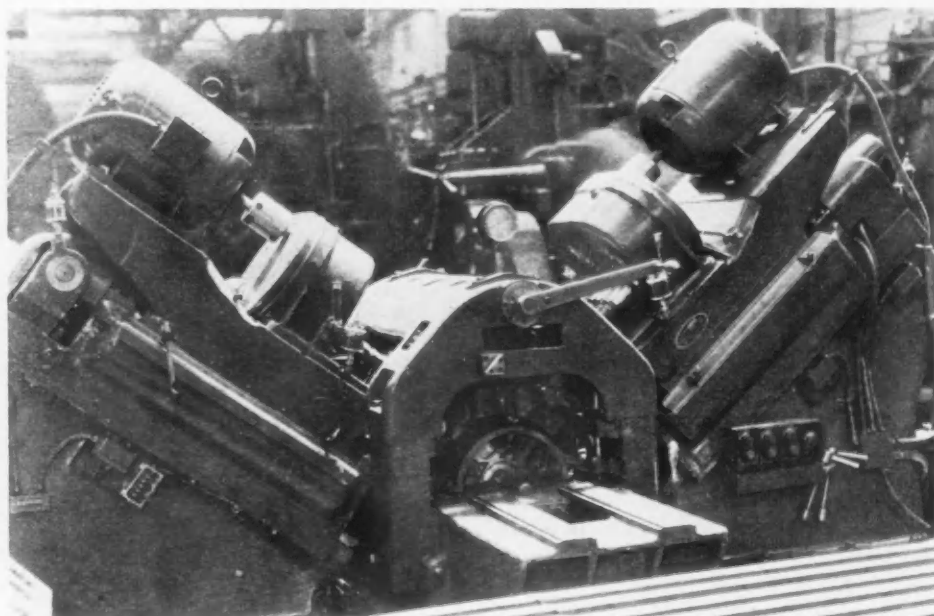
By BURNHAM FINNEY

Detroit Editor, The Iron Age

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For description of additional operations on the V-8 cylinder block, see THE IRON AGE, June 2, page 1202-6.

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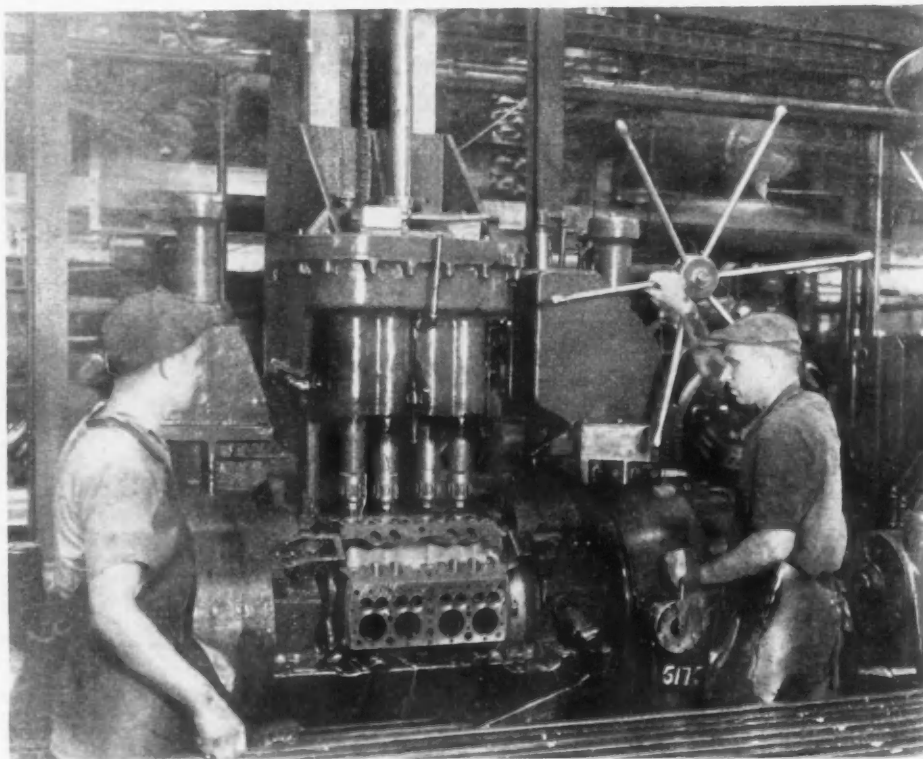
FOR spot facing and chamfering the 16 bushings in the cylinder block for the Ford V-eight, a 16-spindle spot facing machine is used. The operator puts the block on locating pins in a fixture built integrally with the machine, clamping the work in place. After the operator presses a button, starting the automatic running of the machine, the eccentric begins revolving and the table slides over to the proper position for the work, the spindles coming down by hydraulic action. The work cycle is about 45 seconds, at the end of which the spindles withdraw automatically and the eccentric returns to the starting place. The fixture is mechanically controlled by cams and the two heads of eight spindles each are electrically operated. The work done by this machine formerly was performed by two machines.

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A MULTIPLE-head burnishing machine with four specially designed burnishers is employed for burnishing the cylinder bores of the cylinder block. This machine has an automatic indexing fixture. The burnishers are hand fed, but the rollers and burnishers have a tendency to feed themselves in, so that the operator has to exert only a slight hand pressure. This machine, like all Ford machines, is motor driven.

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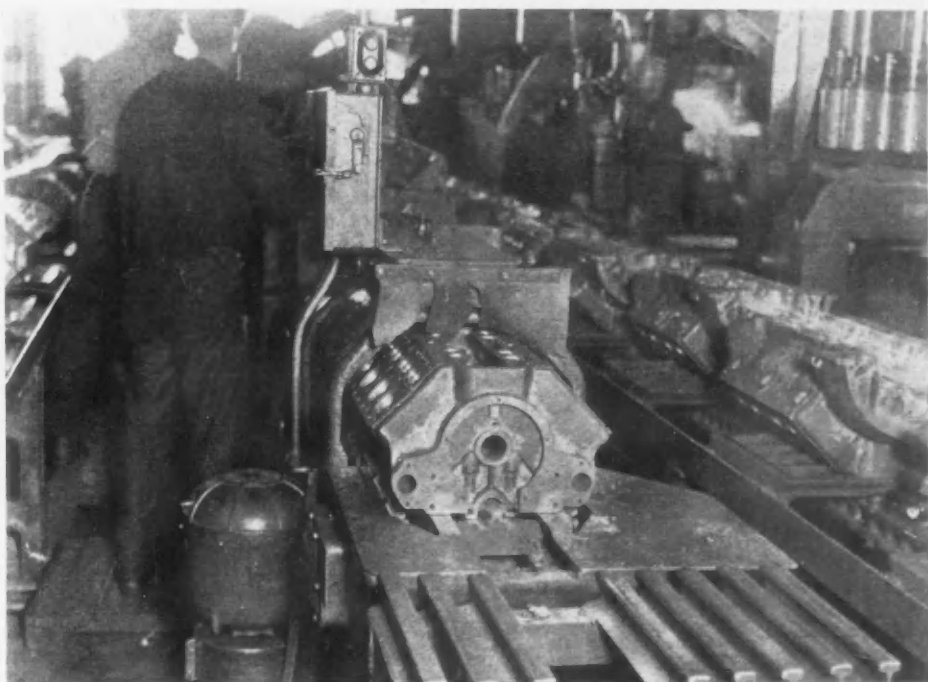
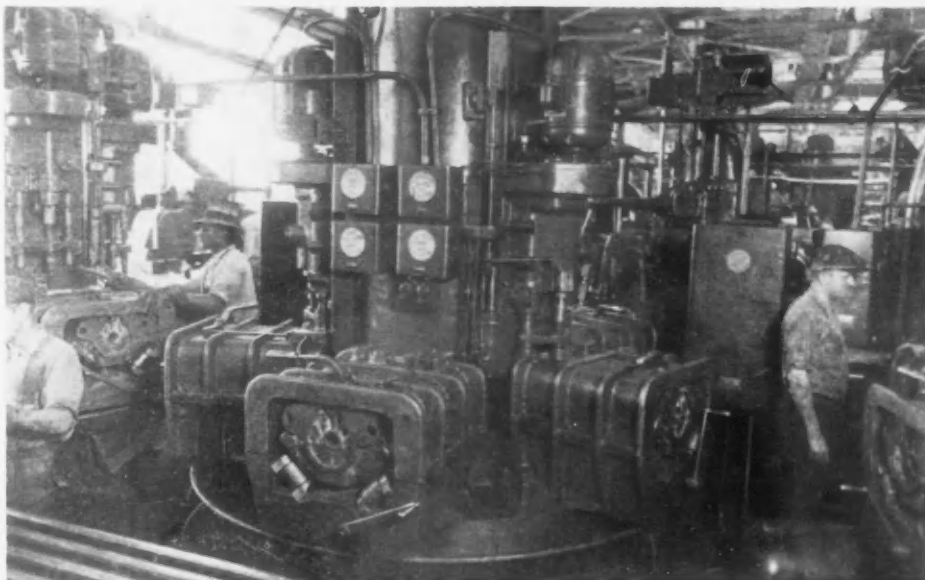




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THE oil pump hole in the cylinder block is bored, flycut and reamed on a rotary drilling machine with four working stations and one loading station. The heads are operated from a single drum with multiple cam groove in the main column. This drum also controls the indexing of the table. The fixture for holding the block in place locates it from one cam bearing hole and one ream bolt hole, the clamping being done by hand.

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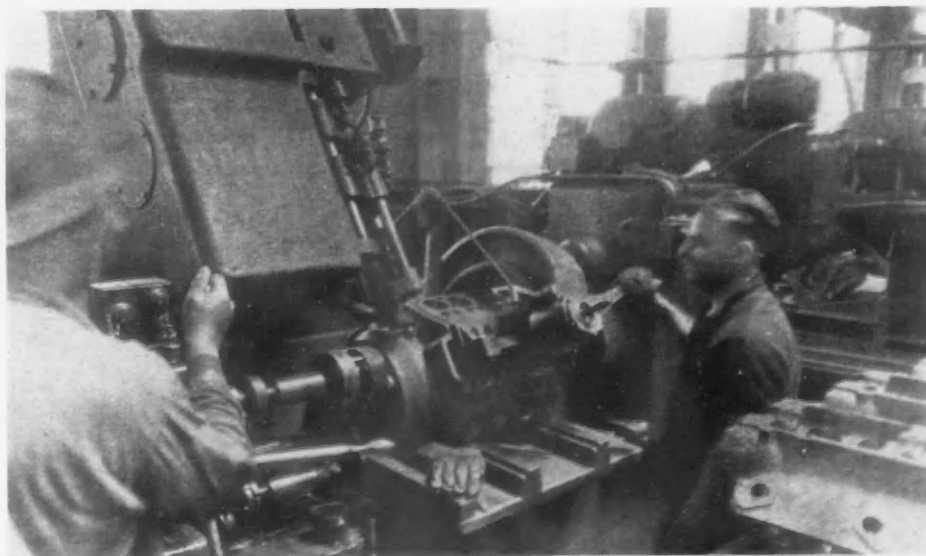


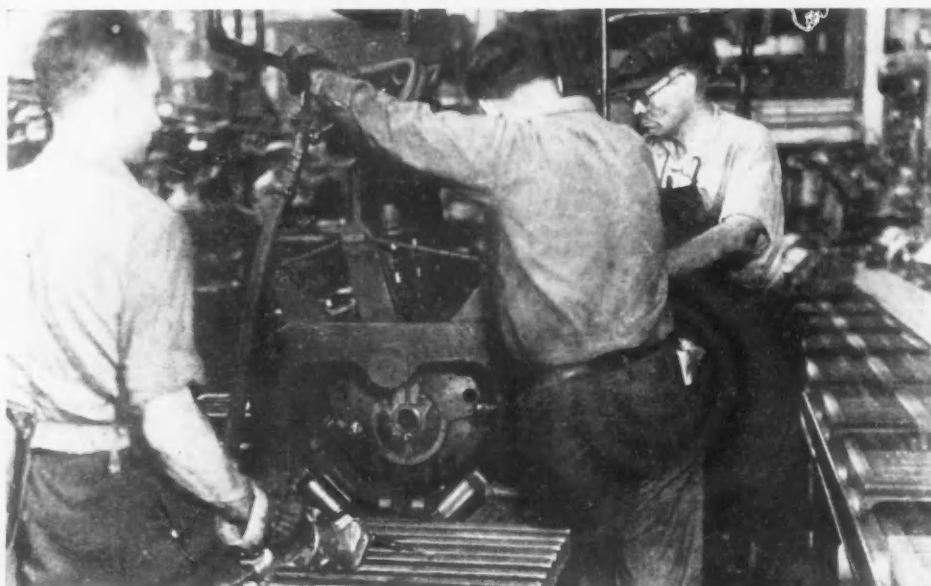
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FOR milling the gates off the bab-bitt the cylinder block is carried on a buggy attached to a drag chain conveyor through a Ford-designed machine in the center of which is a high-speed cutting saw. The block is guided through the machine by a bar which is inserted in the main bearing holes. During its journey the block is held down by a traveling pressure pad. One operator feeds the block into the machine and another takes it out.

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A DOUBLE-END, Ford-designed machine is used for rough and finish boring and reaming the oil pump idler gear hole, finishing the 7-in. diameter front cover support, finish spot facing the front camshaft boss and drilling the oil hole to depth. Each end of the machine is independently controlled and is in charge of an operator. One end has a mechanical feed, but the other end is hand-controlled in order to allow quick changing of the cutting tools. A standard drilling unit is utilized for drilling the oil hole and the block is located in the fixture on one camshaft bearing hole and one main bearing bolt hole. On the 7-in. head is a two-speed motor, the faster of the two speeds being needed for the spot facing operation. On the back stroke after spot facing, the cutter stops revolving and is withdrawn from the work by a cam feed operated by a separate motor.





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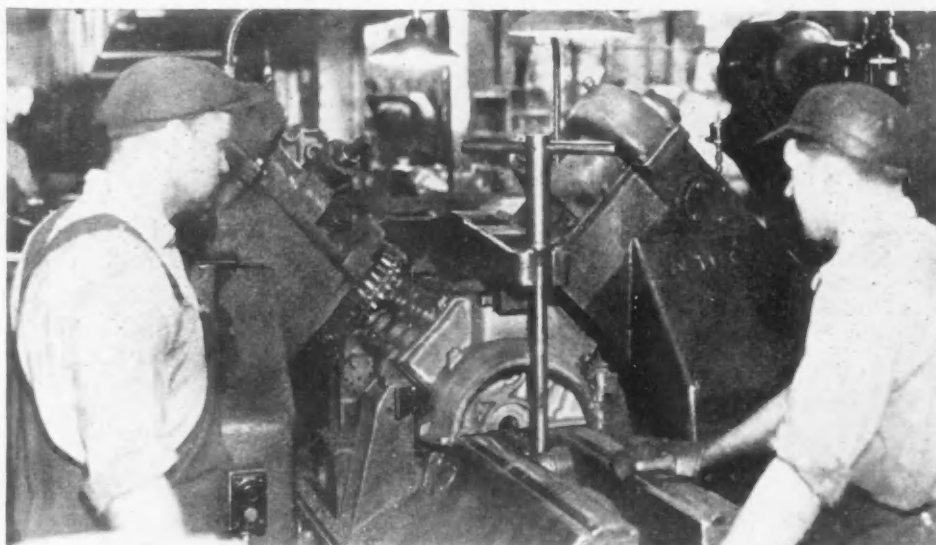
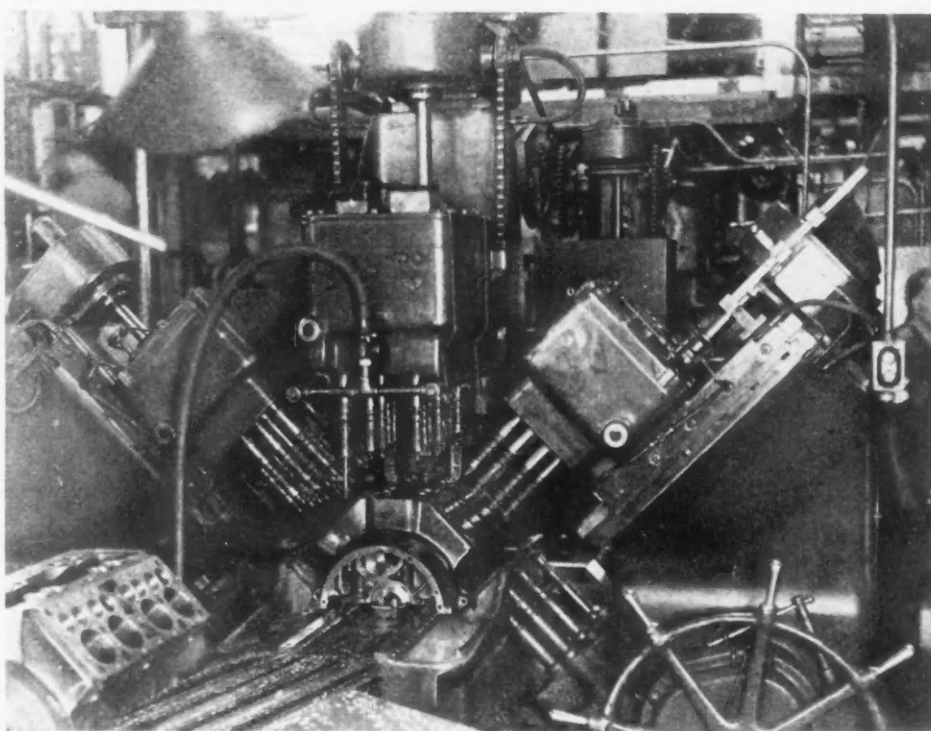
**A**FTER the gates are milled off the babbitt, the cylinder block is turned upside down and placed in a machine for peening the babbitt. The block is guided into place for this operation by means of rollers on two banks and then the operator drops into position a clamp for holding the rear flange bearing. Three air hammers are dropped into the babbitt-lined cast bearings, air is applied and the hammers are rotated 30 deg. each side of center to peen the bearing almost a full half circle. The hammers, which are operated simultaneously, are held in a hand-operated cradle.

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**A**LL holes in the top of the cylinder block, in both banks and both sides for the manifold and port holes are tapped simultaneously on a five-way automatic tapping machine. The machine has a cam-operated feed. The block is located in the machine from two reamed main bearing bolt holes and is clamped at the top by means of a hand-operated device.

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**L**OCATING pads on the cylinder block are milled in a machine possessing two heads set at a 90-deg. angle. The cam-operated table is electrically controlled so that it stops on completion of the milling cycle. Beneath the table of the machine is a long stroke air cylinder with cam-operated valves to keep the table from producing chatter marks in the work. The block is set on approximate guide strips and slid by the operator onto the elevated portion of a fixture. It is then dropped down to rest on four rest pads which are cast on the block particularly for this purpose and which are removed in subsequent machining operations. Two of the rest pads are supported by a rocker to locate the block on three points. A hand-operated equalizer centralizes the lower part of the block.

# Plan to Ship More British Steel To Canada Beset with Difficulties

OTTAWA, July 26.—Possible losses in American exports of iron and steel to Canada as a result of new trade arrangements growing out of the Imperial Economic Conference, now in session here, have been greatly exaggerated. Early estimates were that shipments from the United States would be cut fully one-half. No guess is hazarded at the moment as to what will be the result, but it is clear that the effort will be made to ease more British steel manufactures into the Dominion than has been the case heretofore.

If the agreement between Canadian steel producers and the representatives of the British steel manufacturers provides for further preferences to the British products, it will mean less protection to the Canadian manufacturer than he now has. There is not much belief that higher general duties (those paid, for example, on United States products) are comprehended in the agreement.

## Views of Canadian Makers

One reason for assuming that some commodities may be given protection, in a way to favor importation of the British steel, is a statement by Premier Bennett, in his address to the conference, proposing an extension of the free list and increased preferences on a selected list of articles in which Great Britain is especially equipped to supply the Canadian market without injuring "efficient" Canadian enterprise. The Canadian steel trade considers the use of the word "efficient" as of more than passing importance.

It remains that there are among the producers of steel in Canada those who think less of protection than of an arrangement which will increase an interchange between countries of the British commonwealth; in such a case the seller in Europe, it is held, would be enabled to increase his purchases.

If these were diverted to Canada, it would make for increased activity in the Dominion and sooner or later increased buying to absorb as much steel as was lost to the British seller.

Irrespective of anything which may follow a successful conclusion of the economic conference, importation of steel from the United States into Canada will hold up on the one hand, because of products not elsewhere obtainable, because of years of close commercial relations and contacts, because of proximity of plants of pro-

ducers to the customer—with substantially overnight shipments in some cases—and because of the important item of servicing; but it will tend to drop, on the other hand, as Canadian producers enter into new lines of manufacture.

## New Capacity in Canada

As a matter of fact Canada's steel industry has been gradually diversifying and expanding, and there are reasons to believe that the production facilities of Canada are likely to increase faster than the normal increase in Canadian consumption, leaving a relatively reduced proportion to come from outside its borders.

By way of illustration, it is necessary only to mention the virtual completion at Welland, Ont., of the Page-Hersey mills for the manufacture of 10-in. pipe, thereby to corral some of the oil-line construction that is expected to be a certainty with the return of confidence. Then there is a plate mill at Hamilton, Ont., of the Dominion Foundries & Steel, Ltd., which was visited by the delegation of British steel interests to get ocular proof—and presumably protection under the proposed reciprocal tariff arrangements—that Canada can produce plates up to 78 in. in width. And more far-reaching than these, there is the Steel Co. of Canada, widely regarded as having the financial resources for a program of enlarged capacity whenever it is thought expedient to pursue it.

It remains that Canada's consumption is small measured against that of the United States. It makes about half of what it consumes, or, roundly, 1,000,000 tons of the 2,000,000 tons absorbed. The share of the United States is roughly two-thirds of the Canadian imports, which in turn is only 2 per cent of the United States production. [Tabulations elsewhere in this issue give statistics on the subject that have never before been published.]

A canvass of numerous Canadian consumers of steel developed views somewhat different from those of the producers. They believe the steel situation, so far as any Empire agreements are entered into, will be one of protection to the home industry and that steel therefore will not cost them any less. The fact is accepted as a contribution to the depression and one worth while if the conference, in its broader accomplishments, succeeds in moving the cereals, meat and lumber

which, after all, constitute the great problem of the meeting. To what extent purchases of British steel can be increased if the British commonwealth expands its consumption of Canada's large supplies of food products and timber and pulp is not clear.

The answer is all the more difficult to find when stock is taken of the existing preferential tariff to British manufactures, not to mention the barrier of the money exchange situation which works decidedly to the disadvantage of American imports into Canada. When British products of a kind or class made in Canada are imported, the pound sterling, for purposes of duty calculations, is put at a value higher than that ruling in free exchange. It is regarded as likely that some change in this practice will be made, in which case duties will be levied on the same exchange basis as that on which the bills for the goods are paid. About every two weeks the Canadian Customs announces the custom's value of the pound. It has latterly been established at \$4.40, while equivalent New York exchange has been ruling at \$4.09 to the pound, allowing for exchange between the United States and Canada.

## H-Beams To Hold Their Own

It is difficult, further, to expect a marked increase in any short period of time of British sales of steel to Canada. New alignments of channels of trade call for something besides tying to a new source. For example, Canada has been a large buyer of structural steel. No small part of it has been in the so-called H-beams, or wide-flanged material. Because England does not roll such shapes, it is possible some structures would be designed wholly for standard shapes. On the score that some of this new business for the British might require new rolls to meet the Canadian market requirements, a plan is believed to have been under consideration to provide protection for perhaps five years to give the British makers an opportunity to get back the cost of the rolls. It is not clear that the making of H-beams was comprehended in this suggestion, seeing that only a large latent consumption of such sections warrants the great financial outlay required to establish a wide-flange structural mill.

The existing duty on beams up to 6 in., channels up to 7 in., angles up to 6 x 6 in., etc., is \$4 a net ton to



British manufacturers and \$6 on the general schedule, which is the rate levied against American structural material. On heavy plain material, the existing duty is \$2 on British sections and \$3 on those of other countries, so there is the possibility of a reduction on the British preferential duty in the category of the heavy shapes and even of an increase on the general duty, if anything of the protection idea obtains for the British maker.

It is freely admitted, however, that in cases where the H-shapes are economical in weights, speed of erection and the like, coupled with the fact that Canadian fabricators are schooled in designing and erection of such shapes, few large structures for which the wide-flanged material is particularly suitable will be redesigned. Instances cited of such redesigning had a different impelling motive. This was the desire to keep employed one's own working force. Accordingly built-up sections of angles and plates were resorted to not to avoid duties but to maintain employment. Incidentally, it is estimated that only 20 per cent of the

steel going into one of the latest buildings erected in Montreal could have been supplied by Great Britain under present material conditions. Perhaps a movement independent of any relating to the high costs of Canadian delivered American steel is that which looks for a continued development of welding in structural steel work.

In the field of plates, if the Hamilton producer referred to gets an extension of protection, and the rates remain as they are, the British preferential plate duty, now \$4.25 a ton on plates up to 60 in. in width, will be extended to apply to widths up to 78 in., but beyond that the British plates will be free as they now are when wider than 60 in. The general duty at present, applying to the United States, is \$7 on sizes made in Canada and \$5 on widths not made in Canada.

There is some expectation that a duty will be established for stainless steel, with arrangement for a British preference, possibly with no duty at all. Certain it is that Great Britain would like to expand its sales in this division of the market, including sheet products.

Skelp enters Canada free of duty from British makers, with 5 per cent from others. Quantities of both Belgian and German pipe material have been imported, although the Belgian product is basic Bessemer. Contentions of quality in this case have apparently been overbalanced by the influence of price and no views have been forthcoming as to how the British are to wrest new orders from the mills of the Continent.

We could go on recounting the surmises in almost every division of the steel business. The fact remains that until the broad principles of the imperial conference are laid down and some practical working understanding is achieved the understanding between the British and Canadian steel interests is only of academic interest. If, as seems likely, concessions have been made provisionally by the Canadian producers, they were done in the larger interest of promoting trade and commerce. The decisions, in the event of a failure of the conference to consummate its ends, might be considerably modified and embodied in part in a revision of the Canadian tariff regulations.

## How Big a Steel Customer Is Canada?

**T**HE reported Canadian-British pact under which American steel business with the Dominion would be diverted to Great Britain has aroused interest in the volume and importance of the trade done with our Northern neighbor.

Canada, for a considerable period, has been our best customer in steel. Ordinarily it takes about 40 per cent of all of our iron and steel exports, and this percentage has shown little variation despite wide fluctuations in total business. In 1931, a depression year, the Dominion took 43 per cent of all our iron and steel exports, including scrap, pig iron, ferroalloys, cast and rolled products. In 1930, it took 41 per cent of our total shipments to foreign countries; in 1929, it took 42 per cent; in 1928, 41 per cent; in 1927, 40 per cent.

Scrap has been an important item of Canadian importation. In 1931 the Dominion took 68,210 tons of old material from this country, or 50 per cent of all of our exports. It is presumed that scrap will not be affected by the proposed Canadian-British program, since it is to the advantage of Dominion mills to get their raw materials as cheaply as possible. Rolled iron and steel products are most likely to feel the effects of the plan, if it is actually put into force.

In these products the United States has had the lion's share of Canada's

▲ ▲ ▲  
**C**ANADA has been taking more than 40 per cent of our exports of all forms of iron and steel, including rolled material, scrap, pig iron, ferroalloys and castings.

The United States has been supplying 68 to 83 per cent of all the rolled iron and steel imported into Canada. The United Kingdom's share has ranged from 7 to 21 per cent.

Canada's imports from the United States have represented 1.5 to 2.2 per cent of our total production of finished rolled products.

American shipments of rolled products to Canada have ranged from 75 per cent to more than 100 per cent of the Dominion's own production.

▼ ▼ ▼  
business. Dominion statistics since 1924 disclose that American mills have supplied from 68 to 83 per cent of all imports, as against 7 to 21 per cent for British producers. These figures are shown in the table.

Canada's imports of rolled iron and steel products from the United States,

moreover, have sometimes exceeded domestic production and have been consistently more than 75 per cent of home output. In 1924, imports from the United States equaled 76 per cent of Canadian production; in 1925 they were 77 per cent of Dominion output; in 1926, 105 per cent; in 1927, 85 per cent; in 1928, 83 per cent; in 1929, 90 per cent; in 1930, 86 per cent.

An important reason for these large imports is that Canadian mills have not the volume to justify specializing to the extent that American producers have. In other words, the Dominion has been buying from us products which its own mills do not roll. The principal products rolled in Canada are rails, wire rods, merchant bars, reinforcing bars, light structural shapes and railroad track supplies. A very large proportion of the total output goes to the railroads. In 1929, when Canada had its largest production since the war, rails and track supplies accounted for 53 per cent of all the steel rolled in the country.

Products that the Dominion has bought in large quantities from the United States include plates, galvanized sheets, black sheets, tin plate, bars, skelp and heavy structural shapes. In 1931 Canada took 56,434 tons, or almost 100 per cent, of our total skelp exports of 56,496 tons. In the same year it took 87 per cent of our exports of heavy structural



shapes, 83 per cent of our plate shipments, 59 per cent of our black sheet exports and 37 per cent of our steel bar shipments. Presumably because of the completion of galvanizing and tinning facilities at the plant of the Canadian Steel Corporation, its im-

proximity to American mills makes possible and will be indisposed to abandon hand-to-mouth buying habits in order to stock materials from distant overseas mills. In the second place, the Canadian construction industry uses American Society of Test-

tory solution of the problem, as model and parts changes occur so rapidly that warehouses could not be expected to store all the necessary items.

So far as quality of steel, such as automobile body stock, is concerned, it is believed that satisfactory material could be obtained by Canadian users from the United Kingdom. High finished sheets, for example, are produced in England for English car makers by English mills, a few of which are licensees of American mills. But here again the matter of prompt deliveries and service is paramount.

If an embargo were put into effect, it would throw the burden of supplying the Canadian steel users directly on the shoulders of British mills, for Canadian mills are not equipped to manufacture the necessary materials.

The threat which most concerns Detroit is the proposed raising of the "domestic labor content" of Canadian products, which now calls for a minimum of 25 per cent of Canadian labor. The proposal is to double the percentage required. This would strike directly at Michigan automobile plants which make parts for assembly in Canada, the assembly process now qualifying the cars to pass the necessary Canadian domestic labor content. In 1931 automobile parts for assembly formed the second largest item in value among Canadian imports from the United States, amounting to \$10,544,683, to which replacement parts added a further \$4,000,000.

Raising of the domestic labor content is not of such concern to Ford and General Motors as to independent companies. Ford of Canada and General Motors of Canada have fairly well integrated plants. It is estimated that the former now gets from the United States only 20 to 25 per cent of the parts going into the Canadian Ford car. Perhaps these figures also are fairly representative of the position of General Motors of Canada. Other companies, however, are not in so fortunate a position. American independent car manufacturers are solidly opposed to a change in the present status and some declare that they might be forced to abandon the Canadian market in case the labor content is doubled.

To check old electric motor installations to determine whether or not the power conditions of the shop may be improved or to raise the power and load factor, the Triumph Electric Corp., Cincinnati, has prepared a 4 x 8½-in. card tabulating motor performance. On the reverse side of the card are brief directions for the use of the data. A copy of the card may be had on request.

Shipments of railroad locomotives in June rose to 17 units from 15 in May, according to the Bureau of Census. The June shipments consisted of 12 steam and five electric locomotives, all for domestic use.

CANADIAN IMPORTS OF ROLLED IRON AND STEEL

Year	Total	(In Net Tons)		From United Kingdom	
		From United States	Per Cent of Total	Tons	Per Cent of Total
1924.....	599,316	470,136	78	113,778	19
1925.....	688,247	545,561	79	94,686	14
1926.....	923,124	762,376	83	86,641	9
1927.....	888,858	713,188	80	74,245	8
1928.....	1,145,856	936,056	82	93,657	8
1929.....	1,334,505	1,075,016	81	136,369	10
1930.....	937,204	746,320	79	125,891	13
1931.....	517,716	353,094	68	109,410	21

ports of tin plate and galvanized sheets dropped off sharply in 1931. Tin plate accounted for only 4 per cent of our exports of that product, as compared with 28 per cent in 1930, while galvanized sheets accounted for only 9 per cent of our foreign shipments, as compared with 20 per cent in the previous year.

Despite its rail producing facilities Canada still is one of the leading customers of American rail mills. In 1931 the Dominion took 30 per cent of our rail exports; in 1930, 15 per cent, and in 1929, 17 per cent.

The proposed effort to divert steel business to Great Britain will encounter certain obstacles. In the first place, many of the most important manufacturing plants using steel have been built by United States capital and are accustomed to American specifications and quality. Moreover, they expect the prompt service that

ing Materials specifications. While plans can be drawn employing material of British specifications, difficulties will arise from attempting to use mixed materials—a situation that will often develop because of the quick availability of American steel and also the fact that certain sizes and shapes, such as the larger structural shapes and the wide-flange beam, will still have to be supplied from this country.

But assuming that the worst takes place and Canada virtually embargoes American steel, just what proportion of United States output goes to the Dominion? In 1924 and 1925 shipments to Canada represented 1.5 per cent of total United States production of finished iron and steel rolled products. In 1926 and 1927 they represented 1.9 per cent of American output. In 1928, the figure was 2.2 per cent; in 1929, 2.3 per cent; in 1930, 2.2 per cent.

## Proposal to Raise Canadian "Labor Content" Worries Automobile Trade

**DETROIT, July 26.**—The threatened Canadian embargo on American steel products and the proposal to raise the "domestic labor content" of Canadian industrial products are subjects of vital interest in Detroit.

Canadian subsidiaries of American automobile companies are reluctant to express opinions regarding the effects of an embargo on steel articles, since they feel that the discussion of this subject at the Imperial Conference at Ottawa is only in its preliminary stages and perhaps nothing will come of it. They believe that Canadian representatives at the conference will

be slow in surrendering the advantages they now have in buying their materials from American mills.

That is, the matter of deliveries plays such an important part these days that Canadian automobile plants feel that they could not safely rely on the service they could obtain from mills 3000 miles distant in the United Kingdom. Deliveries of orders would be a matter of weeks instead of days as it now is when steel is transported to Canada from Pittsburgh, Detroit or some other nearby American city. Even the establishment of Canadian warehouses by British steel companies would not provide a satisfac-

# British and Belgian Works Curtail Operations

**Blast Furnaces Are Being Put Out and Mill Operations Are Increasingly Irregular—Tin Plate Demand Improving**

LONDON, ENGLAND, July 25 (*By Cable*).—The market is quiet with the approach of the holidays and little revival is expected before autumn. Additional blast furnaces are closing and steel mills are working irregularly. Hopes have been aroused by the Anglo-Canadian steel pact and details are awaited with considerable interest.

The Continental market is inactive despite the ending of the Belgian coal strike. Belgian pig iron output has been curtailed by the blowing out of three furnaces, leaving 40 furnaces out of 62 in commission. Active furnaces in Luxemburg total 21 out of 46.

The Polish Kattowitz works reopened its Falva blast furnaces and coke ovens after eight months of idleness, following the receipt of big Russian orders.

Tin plate demand is improving and prices are firming. Business has been booked with France, Germany, Canada and Australia, and prospects of increasing trade are considered favorable. Under the pooling scheme, output is now slightly below 50 per cent of capacity.

## Gain in Industrial Truck Shipments

Making a gain of six, June shipments of electric industrial trucks and tractors rose to 25 units, as against 19 in May, according to reports received by the Bureau of the Census from 10 leading manufacturers. Twenty-five were for domestic use and five were exported. Orders in June also gained, rising to 33 units from 20 in May.

## Expect Lower Shipments of Iron and Steel

WASHINGTON, July 22.—Shipments of iron and steel in the third quarter of the present year are estimated at 195,569 carloads by the Shippers' Regional Advisory Boards, according to a statement of the American Railway Association. Similar shipments in the third quarter of 1931 were 239,274 carloads, or 18.3 per cent more than the estimate for the same period of the present year. Coal and coke shipments are estimated at 1,323,319 car-

### British Prices, f.o.b. United Kingdom Ports

Per Gross Ton	
Ferromanganese, export	£9 0s.
Billets, open-hearth...	4 17 6d to £5 7s. 6d
Black sheets, Japanese specifications	9 12 6
Tin plate, per base box	15 3 to 15 6
Steel bars, open-hearth	7 17½ to 8 7½
Beams, open-hearth	7 7½ to 7 17½
Channels, open-hearth	7 12½ to 8 2½
Angles, open-hearth	7 7½ to 7 17½
Black sheets, No. 24 gage	8 0 to 8 10
Galvanized sheets, No. 24 gage	9 5 to 9 7 6

### Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £ at \$4.86	
Billets, Thomas	£2
Wire rods, No. 5 B.W.G.	4 10s.
Black sheets, No. 31 gage, Japanese	11 5
Steel bars, merchant	2 4
Beams, Thomas	2 2
Angles, Thomas, 4-in. and larger	2 3
Angles, small	2 5
Hoops and strip steel over 6-in. base	3 5
Wire, plain, No. 8	5 7½
Wire, barbed, 4-pt., No. 10 B.W.G.	8 15

loads, a decrease of 20 per cent under the corresponding period of last year; ore and concentrates are estimated at 133,976 carloads, a decrease of 70.1 per cent and machinery and boilers are estimated at 20,087 carloads, a decrease of 26.5 per cent.

## Chemists to Hold Symposium on Metals

A symposium on the physical chemistry of metals has been planned for the eighty-fourth meeting of the American Chemical Society, to be held at Denver, Colo., Aug. 22-26. Papers include: "Thermodynamics of Metallic Solid Solutions," by A. Wachter, Johns Hopkins University; "Thermodynamics of Ore Reduction," by C. J. Maier, Bureau of Mines, Berkeley, Cal.; "X-Ray Analysis of Metals and Alloys," by G. L. Clark, University of Illinois; and "Some Applications of the Fundamental Theories of Metals and Alloys to Practical Manufacturing Problems," by Anson Hayes, American Rolling Mill Co.

About 15 papers on the design, construction and operation of large-scale equipment in which chemical reactions

take place will be presented at a session of the industrial and engineering chemistry division. Two symposia, one on "Industrial Coatings Related to Paint and Varnish," and the other on "Primers and Protective Coatings for Special Metals," will feature the sessions of the paint and varnish chemistry division, the chairman of which is H. A. Nelson, research chemist, New Jersey Zinc Co.

## River Steel Movements Declined in June

Movement of iron and steel products on the Ohio River in the Pittsburgh district during June amounted to 27,306 net tons, according to the United States Engineer office, Pittsburgh. This compares with 28,267 tons in May and with 46,945 tons in June, 1931. Monongahela River steel shipments totaled 18,291 tons last month, as compared with 23,941 tons in May and with 21,340 tons in June of last year. Iron and steel movement on the Allegheny River was 3611 tons in June, as compared with 2550 tons in the preceding month, and with only 500 tons in June, 1931.

## Cincinnati Engineering Company Formed

The E. W. Buschman Co., Inc., 702 Mercantile Library Building, Cincinnati, has been organized to install conveying systems, transmission machinery and allied industrial engineering projects. E. W. Buschman, organizer of the company, is president. He was for many years associated with the machine tool industry as manager of the E. A. Kinsey Co., Indianapolis, and for the past five years was sales manager of the Alvey-Ferguson Co., Cincinnati. R. B. Vogt, for many years chief engineer of the latter company, is vice-president and chief engineer of the new organization. J. W. R. Bradford, a Cincinnati corporation attorney, is secretary of the Buschman company.

## Steel for Exposition Sky Ride

Two thousand tons of steel will be required for the towers of the "sky ride" of Chicago's 1933 exposition and another thousand tons will go into the aerial, supporting and backstay cables. Joining with the "Century of Progress" in building this unique amusement feature are the Great Lakes Dredge & Dock Co., Inland Steel Co., John A. Roebling's Sons Co., Mississippi Valley Structural Steel Co. and Otis Elevator Co. Total cost will be approximately \$1,000,000.

# St. Lawrence Seaway Arouses Apprehension in Steel Trade

Foreign Competition Would Be Accentuated, It Is Feared—Likewise Would Disturb Domestic Market Relationships

WASHINGTON, July 26.—Opening of the United States markets to ocean freight from the Atlantic seaboard to the Middle West as the result of the St. Lawrence treaty has offered some speculation as to its significance to the iron and steel industry. The discussion, however, is simply in the stage of suggestions as to what the undertaking will mean in the way of readjustment of the industry, if it means that. Perhaps a wider discussion relates to the possibility of opening American markets even more widely to European steel, produced by labor that, in the light of American standards, is pathetically cheap.

The project of course will, in effect, convert points on the Great Lakes into ocean ports, tying them to all continents of the world. Cheaply produced steel, cheaply transported, it is suggested, can be laid down not only at these lake-ocean ports as far west as Chicago, but can penetrate for great distances into the hinterland and reach even the Far West.

In normal times the inland freight rates restricted distribution of foreign steel rather closely to the coastal areas of continental United States. It was unusual for steel to penetrate for more than 50 miles inland from the seaboard. With the setting in of the depression, Europe, particularly continental Europe, has slashed wages and costs in a desperate effort to reach the American markets for steel, and has not hesitated to dump it in order to obtain an entering wedge. The demoralizing effect upon American steel in its own market is painfully evident. Coupled with the dwindling demand, the foreign shipments have reduced the American industry to a coffee-and-tea basis. Orders for a single sheet, or plate, or for a half-ton or one ton of various products have become common. While previously they would have been considered almost grotesque, they have actually become a part of enforced trade practices in a 60,000,000-ton industry. Keen competition for 10 or 20 tons of steel business is not unusual, nor is it humorous as it would be were it merely a contemplative rather than a real situation.

Perhaps the St. Lawrence project will possess so many ramifications that its part in the economic and industrial life of the nation cannot be forecast. There may be both overestimates and underestimates of its results. Wheat farmers may or may not be under a misapprehension as to

the benefits. It may contain elements of aid to the American industry. Moving steel more cheaply for exportation is one prospect, just as the moving of incoming steel from abroad is a prospect. In view of higher American costs, however, the advantage in this international trade will lie with the importers. Their ports of entry will no longer be confined to such points as New York, Philadelphia, Baltimore, Houston, Galveston, San Francisco, Los Angeles and Seattle. They will include all Lake ports.

It is difficult to see how the American industry can protect itself except through sharp application of laws against foreign dumping and unfair practices, and through greater lifting of the tariff. But the day has dawned, in the view of many in the steel trade, when maudlin sentiment and gullibility surrounding foreign relations, international trade, war debts and related issues must give way to

## Railroad Merger Plan Far From Consummation

WASHINGTON, July 26.—While far-reaching in its possibilities, the plan of the Interstate Commerce Commission announced last Thursday, proposing a four-system railroad consolidation is only in the formative stage. In order to be effectuated the plan would have to be acceptable to the railroad properties, which comprise virtually all lines east of the Mississippi River, except in New England. There would even then have to be approval by the commission of the plan as finally proposed by the carriers.

Doubt has been expressed that the plan suggested by the commission in its latest report will be acceptable to the railroads. One point made is that the Pennsylvania system might object to the requirement that it either divest itself of all stock held directly in the New Haven and indirectly in the New Haven and the Boston & Maine or place the stock in the hands of independent trustees approved by the commission.

The plan carries a number of important modifications in the proposal of the railroads and is a revision of the previous plan of the commission for a five-party system. The new plan calls for the consolidation of about 57,000 miles between New York and Chicago through absorption of practically all so-called secondary

common sense and measures calculated to preserve the integrity of American industry.

The St. Lawrence project is not to be discouraged simply because on its face it might hurt the steel or any other industry. Remedies to overcome the injury must be applied. Benefits must be used to the greatest advantage. Cheaper incoming shipments of raw materials from abroad may be seen as one benefit. Whether it would mean benefit to one section of the industry as against another is a matter of speculation. The Atlantic seaboard industry, according to one view, would be stimulated. The theory is it would obtain larger markets in the Middle West. Nevertheless, the interior plants would also have advantage of water rates, though to a lesser degree. On Pacific Coast business the Atlantic seaboard plants now can move tonnage by vessel, and that situation likely would be but little changed. Lake Superior ore might move more freely to Eastern plants, supplanting foreign ore, though this is questionable. The foreign ore now comes in at cheap rates, often in bottoms owned by the consuming steel interests. Likewise the growing leanness of the domestic ore, it is contended, would mean continued use of foreign ore of higher iron content, some of which comes from American-owned consuming companies.

carriers. The Pennsylvania would be allocated about 31.5 per cent or 17,957 miles; Chesapeake & Ohio-Nickel Plate, 13,965 miles; the New York Central, 13,509 miles, and the Baltimore & Ohio, 11,571 miles.

## Foundry Equipment Orders Off

Bookings of foundry equipment showed a decrease in June when such orders were indexed at 14.2, compared with 18 in May, according to the monthly report of the Foundry Equipment Manufacturers Association. The June figure compares also with 13.75 in April, 27.5 in March, 27.6 in February and 20.5 in January. The association derives its base 100 from the average monthly shipments for 1922, 1923 and 1924.

## Kron Co. Appoints Agents

The Kron Co., Bridgeport, Conn., has made the following agency appointments for its line of industrial scales: Industrial & Commercial Scale Co., 121 North Brevard Street, Charlotte, N. C.; J. Kirk Rowell, Urban Building, Louisville, Ky., and Williams, Cole & Wolff, Inc., 315 Commerce Building and 744 North Fourth Street, Milwaukee, Wis.



# Steel Corporation Loss Heavy; Preferred Dividend Continued

Operating Deficit of \$3,362,736 Sustained in Second Quarter; Showing Is Worst in History of the Company

**D**IRECTORS of the United States Steel Corp., at their meeting on Tuesday, declared the regular quarterly dividend of 1% per cent on the preferred stock, in the face of the poorest quarterly returns in the history of the company. A statement issued in comment on the report was to the effect that "improvement in the business and earnings must in future determine dividend action on the preferred stock."

The deficit for the quarter resulting from operations, after deducting all expenses, including ordinary repairs and maintenance of plants and taxes, was \$3,362,736, compared with \$1,136,607 for the first quarter. Charges and allowances for depletion, depreciation and obsolescence accounted for \$9,872,733. Bond interest totaled \$1,329,544, making a total deficit from operations of \$14,565,013, compared with \$13,218,549 for the previous quarter. A special charge of \$5,887,160 was made to allow for the proportion of overhead expenses (of which taxes alone are \$4,819,317) of the Lake Superior iron ore properties and Great Lakes transportation service, which normally are included in the value of the season's production of ore carried in inventories, but which is not so applied on account of the extreme curtailment in tonnage of ore to be mined and shipped this year. This allowance, plus the dividends on the preferred stock (\$6,304,919), brought the total quarterly deficit provided from undivided surplus up to \$26,757,092. This compares with a total deficit provided from surplus of \$19,523,468 for the previous quarter.

A statement given out at the conclusion of the directors' meeting pointed out that the quarter's returns fell short by \$20,452,000 of earning anything on the preferred stock. Moreover, nothing has been earned on the stock since the third quarter of 1931. Continued payment of preferred dividends and net losses from operations have resulted in a total draft on surplus of \$60,008,670 in the year ended June 30. In the same period common dividends were declared to the amount of \$13,054,878, so that the total reduction in surplus during the 12 months has been \$73,063,548.

## Other Financial Reports

The Jones & Laughlin Steel Corp. in the quarter ended June 30 had net loss, after all charges including taxes, depreciation, depletion and bond interest, of \$2,110,851, compared with

\$2,399,089 in the preceding quarter. After deductions for dividends, reduction in surplus during the first half amounted to \$6,124,572.

The Republic Steel Corp. reports a loss of \$2,744,826 for the second quarter after deductions for maintenance, depreciation and interest, as against a loss of \$2,476,292 for the first quarter.

The Colorado Fuel & Iron Co. reports a deficit of \$795,190.68 for the second quarter without deduction for Federal taxes or for equipment retired, compared with a loss of \$389,061.36 in the first quarter.

## British Duties Lowered on American Machinery

WASHINGTON, July 26.—Exemption or reduction of tariff duties on numerous kinds of machinery and machine tools when imported into the United Kingdom has been approved by the British Treasury, according to Assistant Commercial Attache Homer S. Fox, London. Treasury approval followed recommendation of the Import Duties Advisory Committee, made under the provisions of the finance act of 1932.

Machines which may now enter the United Kingdom without payment of duties or at lower rates follow:

Sugar making, textile, glass making and working, chemical and soap making, weighing, packing and filling, paper making, printing, bookbinding and labeling, metal and leather printing and embossing, cable making, tobacco, cigar and cigarette making, food preparation, brush making, fur skin dressing and preparing and finishing machines, electric furnaces, machine tools, including metal-working and wood-working machinery; machinery for corrugating, cutting, creasing and folding paper and cardboard, and for the manufacture of cardboard boxes, tubes and cartons and of paper bags; agricultural machines, including dairy machinery.

It is required that applications be made for importation of these classes of machinery and machine tools by or on behalf of a firm purchasing machinery for its own use or by an importer having the sole agency for the sale of a particular machine in the United Kingdom. Forms are provided for making applications.

The present general tariff rate, applying to shipments from the United States, is 15 per cent for agricultural

machinery and 20 per cent for other machinery.

The British finance act of 1932 contains a provision for the exemption from duty, or reduction of duty, in the case of certain types of machinery upon importation into the United Kingdom. In order to get exemption from or reduction of duty, it is necessary to apply to the Import Duties Advisory Committee. The committee then makes an appropriate recommendation to the Treasury, which, upon approval, issues the required order.

## Fall Meeting of Institute Called Off

The directors of the American Iron and Steel Institute, who convened in a regular monthly session at New York last Thursday, canceled the fall meeting of the institute, which had been scheduled for October. The prospect of a poor attendance was ostensibly the principal reason for this action, but it is possible that the decision may have been prompted by the plans that are now under way for broadening the scope of the association's activity.

It is rather well known that Charles M. Schwab plans retiring from the presidency of the institute, and it would not be surprising if he announced his resignation at the next meeting of the directors in August. It is understood to be the purpose of the directors to obtain an outstanding man, preferably from outside of the industry, to head the institute and to give it his undivided attention. The assumption is that he would be elected to the presidency, if Mr. Schwab retires.

## Canadian Production Hits New Low in June

TORONTO, July 25.—Production of pig iron in Canada for June dropped to the lowest monthly record since before the World War. Total output was but 8163 gross tons.

During the month one furnace at Sault Ste. Marie, Ont., was blown out and one at Hamilton banked, leaving all Canadian stacks idle at the end of June. It is stated, however, that the Algoma furnace and one at Sydney, N. S., have since been blown in.

Output of steel ingots and direct steel castings in June reflected the drop in pig iron and declined to 18,118 tons from 29,239 tons in May.

June production figures and comparisons follow:

	June, 1932	May, 1932	June, 1931
Pig iron.....	8,163	13,339	55,822
Steel ingots and direct steel castings....	18,118	29,239	55,605
Ferroalloys....	893	1,132	2,740

# OFF THE ASSEMBLY LINE



## Ford Retrenchment Will Bring Down July Motor Car Production; New Essex Model Brought Out

DETROIT, July 25.

**A**S the end of the month approaches further curtailment in automobile production indicates that total assemblies in July may not exceed 150,000 units, as compared with 190,000 in June. Ford's activities have been contracted and it is now evident that the output of motors at Rouge this month will fall far short of the original program of 85,000, although assembled cars probably will exceed the volume of motors manufactured. Unless sales take a decided turn for the better, August will bring another decline in Ford production.

The unfavorable trend means that Ford's steel purchases for next month will be exceedingly slim. Its buy in June for the current month's requirements was based on a considerably higher output than has been attained, so that Ford's steel stocks, with only small additions, will take care of production needs during the next 30 days. It is estimated that in the first four months since Ford started making its new series approximately 250,000 units have been turned out. Ford dealers are well stocked with fours, the result being that only about 10 per cent of the present output are model B. The public seems to be looking with increasing favor on the V-eight as against the four. Ford's steel operations have not changed recently and six open-hearths are now running.

### Essex Terraplane Introduced

The high spot of the past week in Detroit was the introduction of the Essex Terraplane, with christening ceremonies by Amelia Earhart Putnam and a drive-away of 2000 cars by dealers from all parts of the country. Prices start at \$425 for the roadster and run up to \$550 for the five-passenger sedan. The Hudson-Essex factory will make about 5000 of the new cars this month and is employing 10,000 men. The Terraplane marks the first effort toward a return to the smaller-size car without sacrificing any of the essentials contributing to-

July motor car output not likely to exceed 150,000 cars due to recent cuts in factory schedules.

\* \* \*

Detroit employment index stood at 69.6 on July 15, compared with 68.2 on the same day of 1931.

\* \* \*

Ford produced 250,000 units in the first four months since the manufacture of the new cars started.

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ward making the car easy and cheap to operate. It cannot be called a gadgetless car, unless one is willing to accept a very liberal interpretation of the definition of gadgetless. Practically every part of the car or chassis acts as part of the structure. The wheels, for instance, are designed to give a maximum of overhang, adding to the strength of the car at the same time that weight is eliminated. The frame is tied together by numerous and rigid cross members. Among them are a deep front box-type cross member with integral gussets, a channel cross member at the transmission, a diagonal truss or X member behind the transmission, the large web member formed by the body closure which ties to the X member and a rear structural cross member, a rigid stamping at the tank which ties the frame together from one end to the other.

### Price Cuts on Competing Cars

It is significant that concurrent with the announcement of the Terraplane came a reduction of \$36.80 in the delivered price of Chevrolets in Detroit and a sale of Plymouth two-door and four-door sedan thrift models at \$455 and \$495, delivered, completely equipped and including the Federal tax. Chevrolet dealers made the cut by absorbing delivery charges and by eliminating certain extras.

While Chevrolet will make 30,000 cars this month, its August schedule

will be lean. The Chevrolet foundry will begin making castings for the 1933 car in September, with the factory getting under way in October. Deliveries will begin in November, one month ahead of last year's schedule. Just now General Motors units are marking time. Unless there is a considerable improvement in business it is not likely that new models, aside from Chevrolet, will be shown until near the end of the year. One thing, however, is assured. General Motors will not again have the bodies of its various cars styled alike. It would not be surprising to see ultra-modern design in at least one of its lines.

Some of the larger motor car makers are placing a considerable number of steel orders for experimental purposes. Since these are of less-than-carload proportions and quick delivery is specified, they are transported by truck from Pittsburgh and other far-distant steel centers.

## Detroit Notes

In the first half of 1932 Chrysler Corp. sold to dealers 142,624 cars, as against 140,439 in the same period last year. . . . Ford of Canada the past week shipped 220 V-eights on a German boat as the first consignment on an order from the English company for 18,000 cars to be delivered this year. Fully assembled cars were run on to three decks of the boat instead of being shipped knocked down. . . . The Holmes foundry at Port Huron, Mich., is making the cylinder blocks for the Essex Terraplane. . . . A prominent automobile manufacturer is experimenting with a welded tubular steel frame. . . . Fifty-four per cent of all current models in production are eights. . . . It is reported that Plymouth may abandon a four in favor of a six next year. . . . One large automobile factory, supposedly on a production schedule, has not bought a carload of steel in over two months. . . . Early June car registrations show Ford leading Chevrolet for the first time in 16 months.

# PERSONALS

ROBERT GREGG, president of the Atlantic Steel Co., Atlanta, Ga., has been appointed vice-president in charge of sales of the Tennessee Coal, Iron & Railroad Co., Birmingham, effective Aug. 1, succeeding WILLARD WILSON, who has resigned as vice-president and general sales manager. Mr. Gregg became identified with the open-hearth department of the Atlantic company 26 years ago and worked through all departments. He is a director of the American Iron and Steel Institute. CHARLES F. STONE, vice-president of the Atlantic Steel Co., has been made president.

NORMAN W. FOY has been appointed Chicago district sales manager of Republic Steel Corp. Mr. Foy became associated with the old Republic Iron & Steel Co. as a salesman in 1919. He was subsequently manager of the company's Buffalo, Boston and Birmingham offices, and was made assistant Western manager of sales shortly after the formation of the present Republic Steel Corp.

ALFRED C. HOWARD, manager of the East Moline, Ill., scale works of the E. & T. Fairbanks & Co., subsidiary of Fairbanks, Morse & Co., has been appointed assistant to ALLAN E. ASHCRAFT, recently appointed vice-president in charge of all manufacturing for the parent company, with headquarters at Beloit, Wis. Mr. Howard was formerly manager of the Fairbanks, Morse & Co. works at Sherbrook, Canada, and was transferred to the East Moline works as manager in 1920.

FREDERICK W. ELLS, formerly president and general manager, Northwestern Mfg. Co., Milwaukee, has taken over the representation of the Consulting Engineering Co., Pittsburgh. The Northwestern company recently discontinued business and disposed of its arc welder division

to the Harnischfeger Corp., Milwaukee. The Pittsburgh company for many years was sales representative of the Northwestern company. Under Mr. Ells' supervision a wide variety of combustion controls are still being built in Milwaukee for the Consulting Engineering Co. Mr. Ells was the original designer of the track grinder used by railroads, and these machines are also still being built in Milwaukee under his direction. He is at present working on new designs in blast furnace control, of which many types are in use in the United States.

R. F. BALDWIN, who has represented Irving Iron Works, Long Island City, N. Y., in the Philadelphia territory for the past 10 years, has been appointed Philadelphia district sales representative by Hendrick Mfg. Co., Carbondale, Pa. Mr. Baldwin will handle the sale of the company's steel grating, treads, grids and perforated metal grilles. He will continue to make his headquarters at 5813 North Fairhill Street, Philadelphia.

GEORGE E. BENSON, Pittsburgh, has been elected treasurer of the Youngstown Sheet & Tube Co., Youngstown, succeeding WALTER E. MEUB, who was recently elected vice-president in charge of finances. Mr. Benson is a former president of the Monongahela Bank, Pittsburgh, a former vice-president of the Union Trust Bank, Pittsburgh, and is a former treasurer of the National Tube Co.

N. E. THOMPSON, superintendent of the Raimund ore mine, Birmingham, of the Republic Steel Corp., has also been appointed acting superintendent of the Sayreton coal mine, succeeding E. D. CLARK.

RAY A. MILLHOLLAND, of Indianapolis, Ind., has resigned as vice-presi-

dent and director of the Millholland Corp. He has announced no plans for the future.

DR. EDGAR BERNARD BROSSARD, tariff commissioner, who has been re-appointed by the President and confirmed by the Senate, received his formal commission on Wednesday of last week.

HARRY E. DUFF, sales manager in the Cleveland district for the American Sheet & Tin Plate Co., has been promoted to sales manager of the company's Philadelphia office, where he will succeed R. W. SHANNON, who has resigned. Mr. Duff has been in charge of the company's Cleveland sales office for 20 years. He will be succeeded as Cleveland sales agent by E. J. RICHARDS, who for a number of years has been assistant sales manager of the Cleveland territory. The changes will become effective Aug. 1.

WALTER E. MEUB, whose election as vice-president of the Youngstown Sheet & Tube Co., in charge of finances was announced in these columns June 30, to succeed WILLIAM J. MORRIS, who had been made president of the Continental Supply Co., pipe distributing subsidiary of the Youngstown company, with headquarters at St. Louis, started with the Youngstown Sheet & Tube Co. 23 years ago. In 1920 he was chosen secretary of the company, in 1922 he became assistant treasurer and in 1925 was elected secretary-treasurer. J. C. ARGETSINGER, general counsel of the company for two years, has been elected secretary.

R. F. CRAIG, heretofore New York district manager for the Permite sales organization of Aluminum Industries, Inc., Cincinnati, has been made Eastern district manager. J. F. CHRISTMAN, who was for a number of years with the Gill Piston Ring Co., and S. D. OWEN, who has been in the parts business a number of years as a jobber, have been appointed to cover the Eastern territory under Mr. Craig. J. C. SULLIVAN has become identified with the Kansas City office of the Permite organization.

CHARLES C. CLUFF, who retired on July 1 from active connection with the United States Steel Corp., has taken an office at 165 Broadway, New York, room 1001.

JOHN R. HECKMAN has been appointed Chicago district sales manager, with offices in the McCormick Bldg., for the Midvale Co., Philadelphia, succeeding FRED W. SAGER, who has resigned.

RAY A. LACKNER, formerly vice-president in charge of sales for the Neely Nut & Bolt Co., Pittsburgh, has become Pittsburgh branch manager for the E. F. Hauserman Co., Cleveland, manufacturer of steel partitions.



R. GREGG



W. WILSON



N. W. FOY



# • • EDITORIAL COMMENT • •

## Canada Still Will Buy American Steel

"GREATER markets with- in the empire" was Canadian Prime Minister Bennett's putting of the aim of the Imperial Economic Conference, in his opening address at Ottawa last week. Yet he quickly added that to him greater empire markets meant as well greater world markets and that "to us in Canada closer Empire economic association does not mean in any sense world dissociation."

Though Mr. Bennett diplomatically couples greater world markets with greater Empire markets, newspaper correspondents have reported a sentiment at Ottawa indicating that in steel products, at least, future trade between the United States and Canada will be not greater, but less. Specifically, one report has it that the contemplated agreement will "cut down Canadian imports of tin plate, sheet steel, structural steel and other fabricated [sic] steel products from the United States," and at the same time there will be "an increase in Canadian purchases of structural steel and fabricated steel from Great Britain."

More than once THE IRON AGE has called attention to developments which for 25 years and more have made Canada the largest foreign customer of the steel mills of the United States. Chief factor in the account is proximity—the same proximity that has made the United States the largest buyer of Canada's export products. No dream of annexation has been able to enhance greatly the mutual advantages of that physical relationship.

Again and again the ties that bind Canadians to the motherland have been urged as reason for a larger trade with Great Britain. But the records have shown, with little variation, that Canada and the United States have gone on playing the best-customer role, each to other, year after year, as both have gained in population and wealth.

Canada has a steel industry, bounty-fed in its beginnings 25 to 30 years ago. But for a good many years before this depression gripped both countries, American steel mills supplied half, and at times more than half, the Canadian demand. In the three years 1927-29 our iron and steel exports to Canada (largely finished steel) were 3,245,000 tons. In the same three years Canada's output of steel ingots and castings was 3,535,000 tons, while its production of finished steel products was 2,775,000 tons. Canadian imports of steel from Europe in 1927-29 were small, divided among Great Britain, Belgium and France.

With a consuming population of nine millions, Canadian mills could not afford to pour scores of millions of dollars into plants that could roll a full range of products. Rails and bars have been their main output. Just over the border, American mills, with a home market twenty times that of Canada and a consequent diversification of product and adaptation to consumer uses beyond anything known in Europe, have been the natural recourse

of the Canadian buyer, especially for products not rolled at home.

Even with preferential tariffs, British mills have sold but little steel in Canada. Long ocean hauls, reloading into cars, damage to product in overseas shipment, frictions and delays in claims adjustments, variant specifications, are but part of the handicaps of the Canadian buyer of British steel.

Contrast the ease with which an order is telephoned across the border for shipment the same day, the speedy delivery of the steel in the condition in which it left the mill, economy of hand-to-mouth buying against long warehousing of British steel, the overnight arrival of the American claims adjuster—and to these add the whole background of good will and identity of business customs that has grown up in years of reciprocally advantageous trade.

We may still see in Canada the ups and downs of British preferentials and of tariff orders in council. The Imperial Economic Conference may even adopt proposals that on their face look to greater imports of British steel, in return for a larger British outlet for Canadian wheat. But mutual interest and proximity, not omitting "manifest destiny," should work no less effectively than in the past to give American steel a large and growing place in the Canadian industrial advance.

## The New Hampshire Plan

STRIPPED to its essentials, the "New Hampshire Plan" is a scheme of apportioning available work among available workers so far as possible. Obviously the amount paid out as wages is not going to be altered, and the effect is therefore somewhat conjectural. The great mass of workers now employed and already receiving reduced pay will be called upon for further pay cuts in order to take care of the additional workers to be employed under the new plan.

One of the principles of the New Hampshire plan is the so-called flexible work day and work week. James W. Hook, chairman of the Connecticut Unemployment Commission, recently said that his own plant is now working on a fourteen and a half hour week. As business increases, he expects to give the present force more work until it is receiving thirty hours of employment. Thereafter he expects to take care of increased business by manning additional machines so as to employ more workers, and he says he does not plan to increase the week above thirty hours until every machine in the plant is in service.

This artificially shortened week is not without some offsetting disadvantages. In general, it is more expensive to operate ten machines half time than to operate five machines full time. The investment charges may be the same, but in the case of fewer machines operating on full schedules, maintenance charges, power required and the important factor, cost of handling material, are all apt to be lower.

# Exports of Iron and Steel Fall to New Low Level

Omitting Scrap, Out-Going Movement in June Is Smallest for Any Month in This Century

WASHINGTON, July 26.—Omitting scrap, exports of iron and steel from the United States in June aggregated only 30,244 tons, said to be smallest outgoing movement in any month of the present century. With scrap shipments amounting to 21,837 tons, exports were 52,081 tons. The next largest item of shipment was rails, shipments of which were but 2108 tons.

In an effort to bring about economy, the Division of Statistics is attempting a readjustment of import figures and these were not available when those covering exports were prepared. If the plan of the division is adopted, rather important items will be grouped so that the incoming movement of a single product will lose its identity, as will also the ports of entries and countries of origin, except through tedious search. Inasmuch as the import movement of iron and steel

is causing increasing concern, a great deal of protest has been made against the proposed revised plan of presenting figures. It is especially desired that details as to items, ports of entries, countries of shipments, values, etc., be made readily available at this time.

## Directory of Makers of Steel Castings

The 1932-1933 directory of steel foundries has been published by the Steel Founders' Society of America, Inc., 420 Lexington Avenue, New York. Granville P. Rogers, managing director. It gives the personnel and equipment of companies making carbon and alloy steel castings in the United States and Canada; also the kind and quantity of castings each company can make. A separate compilation is also available of foundries

specializing in heat-corrosion resistant castings.

Considerable statistical information is included. Alloy castings constituted 11.6 per cent of the total output in 1931 as compared with 10.4 per cent in 1930. There are 295 steel foundries in the United States and Canada, 268 of which are active. Of the 1931 output of 625,531 net tons, 64.4 per cent were open-hearth castings and 33.5 per cent were electric furnace castings. In heat-corrosion resistant alloy castings, total production last year was 8,019,400 lb., against a monthly rated capacity of 3,299,000 lb.

## British Iron and Steel Output in June

LONDON, ENGLAND, July 12 (*By Cable*).—Production of pig iron in the United Kingdom declined in June but that of steel ingots increased over May. The pig iron total was 311,400 tons against 315,000 tons in May, while steel ingot output was 459,300 tons, against 416,900 tons in June. Monthly totals for all of 1931 and the six months of this year follow:

1931	Pig Iron	Steel Ingots
Jan. ....	337,200	402,200
Feb. ....	318,200	486,400
March ....	357,100	500,100
April ....	323,200	397,400
May ....	346,500	435,100
June ....	323,800	428,900
July ....	317,000	428,700
Aug. ....	275,700	375,300
Sept. ....	248,200	400,500
Oct. ....	284,200	457,400
Nov. ....	296,400	459,200
Dec. ....	329,600	422,400
	3,758,100	5,193,600

1932	Pig Iron	Steel Ingots
Jan. ....	332,400	429,700
Feb. ....	318,100	480,600
March ....	335,600	462,800
April ....	316,900	433,300
May ....	315,200	416,900
June ....	311,400	459,300

## Exports of Iron and Steel from the United States

(In Gross Tons)

	June	Six Months Ended June
	1932	1931
Pig iron, .....	215	764
Cast iron, .....	1,030	1,030
Scrap, .....	21,837	19,400
Pig iron, ferroalloys and scrap, .....	24,972	12,490
Ingots, blooms, billets, sheet bars, .....	10	36
Slabs, .....	1,820	2,504
Wire rods, .....	603	2,412
Rolling finished steel, .....	2,542	5,284
Steel bars, .....	1,397	2,921
Alloy steel bars, .....	77	87
Iron bars, .....	97	133
Plates, iron and steel, .....	424	4,495
Sheets, galvanized steel, .....	1,452	5,879
Sheets, galvanized iron, .....	125	150
Sheets, black steel, .....	4,722	7,645
Sheets, black iron, .....	246	476
Beams, bands, strip steel, .....	883	1,695
Tin plate, .....	2,877	5,413
Structural shapes, plain material, .....	1,624	7,456
Structural material, fabricated, .....	2,408	2,152
Tanks, steel, .....	122	535
Steel rails, .....	2,108	1,699
Rail fastenings, switches, frogs, etc., .....	416	729
Boiler tubes, .....	287	463
Casing and oil line pipe, .....	1,077	1,226
Pipe, black and galvanized, welded steel, .....	1,828	4,222
Pipe, black and galvanized, welded iron, .....	177	638
Plain wire, .....	468	964
Barbed wire and woven wire fencing, .....	1,384	1,795
Wire cloth and screening, .....	51	63
Wire rope, .....	67	124
Wire nails, .....	487	616
Other nails and tacks, .....	285	320
Horseshoes, .....	2	4
Bolts, nuts, rivets and washers, except track, .....	193	344
Rolls and finished steel, .....	25,478	55,164
Cast iron pipe and fittings, .....	306	2,800
Malleable iron screwed fittings, .....	143	340
Car wheels and axles, .....	148	370
Iron castings, .....	295	259
Steel castings, .....	145	114
Forgings, .....	325	551
Castings and forgings, .....	1,362	1,434
All other, .....	627	467
Total, .....	52,081	75,577

## Trackwork Shipments Lowest Since November

Shipments of trackwork for T-rail track of 60 lb. and heavier in June receded to 1975 net tons, the lowest monthly total since last November, and about 35 per cent less than shipments in the preceding month. Shipments of trackwork in the first six months of this year aggregated only 8376 tons, compared with 21,722 tons in the first half of 1931.

## New Coal Wage Agreement

A new wage agreement, calling for an average reduction of between 23 and 24 per cent, has been agreed upon by Illinois coal operators and union miners' representatives. The new base rate is \$5 a day for common labor, whereas the old base rate was \$6.10. This agreement will be in force for the remainder of the fiscal coal year, expiring March 31, 1933.

## SUMMARY OF THE WEEK'S BUSINESS

# Steel Industry More Hopeful, Though Tangible Signs of Betterment Are Lacking

Cheerfulness as to Fall Outlook Now Apparent—Ingot Output Remains at 16 Per Cent—Steel Scrap Higher at Chicago

WITHOUT any change in the volume of business to account for it, an air of cheerfulness has pervaded the long depressed iron and steel industry. Marked improvement in sentiment is predicated largely on expectations of a seasonal recovery beginning not later than September, together with the widespread conviction that fundamental conditions are favorable for a turn and that business cannot much longer remain as bad as it has been the past few months. At Chicago and in other sections of the West the reports of good crops and strengthening of farm products prices are sustaining factors in the raising of hopes for early business betterment.

The action of the directors of the United States Steel Corp'n. in continuing the payment of the preferred stock dividend may be construed as a possible indication of the expectations of the leading steel producer that conditions are ripe for a change.

Not the least of the favorable factors, from the viewpoint of the steel industry itself, is the firmness of steel prices, which have reached more solid ground through the shipment of practically all of the low-priced tonnage carried over from the second quarter. Heavy melting steel scrap, price movements of which are sometimes regarded as having barometric significance, has advanced 50c. a ton at Chicago as a result of offers from Canada and prospective buying by a domestic mill, the first rise in that market since January, 1931. At Pittsburgh there has been an advance of 50c. a ton on turnings, and the entire scrap market has a firm undertone. The rise at Chicago brings THE IRON AGE scrap composite price up to \$6.58, the figure published for the last week of June, from which there had been a decline to \$6.42. Except for a few minor rises, the trend of the scrap composite price has been downward since early in 1930.

STEEL ingot output remains at last week's rate of 16 per cent. A little ground has been lost at Chicago, owing to the idleness of two rail mills, but there has been a small gain at Pittsburgh. In other districts operations are virtually unchanged. Finishing mill schedules are erratic, but actual declines have occurred only in tin plate and sheets.

In a market as dull as now exists, the steel industry is inclined to grasp at small straws of actual or prospective gains, but it is not losing sight of the fact

that the requirements of two important consuming groups, the automobile industry and the can manufacturers, are declining and that an increase in steel business must come from other sources, including the rank and file of miscellaneous users who will shortly be preparing for fall. Lettings of steel for construction work have had a lull this month, and programs to be financed under the Government relief act are very slow to take shape. A movement is on foot to persuade the railroads to undertake the repair of upward of half a million freight cars, with funds to be provided by the Reconstruction Finance Corporation. Such a program would require between 2,000,000 and 3,000,000 tons of iron and steel, depending upon the extent of the heavy repairs. Business interests are prepared to appeal to the Washington Administration for open support of the project as a relief measure.

The oil industry, among the larger steel consuming groups, is expected to be one of the first to expand its buying materially. A better flow of orders for merchant wire products for farm use is counted upon when crops have been harvested. An increase in the call for structural steel, particularly for public works, is regarded as almost certain by early fall. The past week's awards of fabricated steel for buildings and bridges totaled 16,200 tons, not including 3500 tons of pipe for the foundation of the Federal Court House, New York, and 1200 tons of pipe for similar work at the Newark, N. J., Post Office. New projects require 13,100 tons of structural steel.

It is estimated that motor car production during the remaining five months of the year will not exceed 630,000 units, of which 335,000 is the probable Ford schedule, as against a total for the entire industry of about 912,000 in the first half. Ford output has been reduced, as has that of some other companies.

A SIDELIGHT on the severe deflation of the iron and steel industry is the greatly reduced Lake Superior ore movement, which up to Aug. 1 will be less than 1,000,000 tons and not above 4,000,000 tons for the entire season. Stocks of ore at plants and on docks are 12,000,000 tons in excess of normal for this time of year.

THE IRON AGE composite prices for finished steel and pig iron are unchanged at 1.976c. a lb. for the former and \$13.76 a gross ton for the latter.



# ▲▲▲ A Comparison of Prices ▲▲▲

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

## Pig Iron

Per Gross Ton:

	July 26, 1932	July 19, 1932	June 28, 1932	July 28, 1931
No. 2 fdy., Philadelphia.....	\$14.34	\$14.34	\$14.84	\$17.01
No. 2, Valley furnace.....	14.50	14.50	14.50	17.00
No. 2 Southern, Cin'tl.....	13.82	13.82	13.82	14.69
No. 2, Birmingham.....	11.00	11.00	11.00	12.00
No. 2 foundry, Chicago*.....	15.50	15.50	16.00	17.50
Basic, del'd eastern Pa.....	14.50	14.50	16.00	16.75
Basic, Valley furnace.....	13.50	13.50	14.00	15.50
Valley Bessemer, del'd P'gh.....	16.89	16.89	16.89	18.76
Malleable, Chicago*.....	15.50	15.50	16.00	17.50
Malleable, Valley.....	14.50	14.50	15.00	17.00
L. S. charcoal, Chicago.....	23.17	23.17	23.17	25.04
Permanganate, seab'd car- lots.....	68.00	68.00	68.00	85.00

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

## Finished Steel

Per Lb. to Large Buyers:

	July 26, 1932	July 19, 1932	June 28, 1932	July 28, 1931
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.20	2.20	2.20	2.40
Hot-rolled annealed sheets, No. 24, Chicago dist. mill.....	2.30	2.30	2.30	2.50
Sheets, galv., No. 24, P'gh.....	2.85	2.85	2.85	2.90
Sheets, galv., No. 24, Chicago dist. mill.....	2.95	2.95	2.95	3.00
Hot-rolled sheets, No. 10, P'gh.....	1.55	1.55	1.55	1.70
Hot-rolled sheets, No. 10, Chi- cago dist. mill.....	1.65	1.65	1.65	1.80
Wire nails, Pittsburgh.....	1.95	1.95	1.95	1.80
Wire nails, Chicago dist. mill.....	2.00	2.00	2.00	1.85
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.20
Plain wire, Chicago dist. mill.....	2.25	2.25	2.25	2.25
Barbed wire, galv., P'gh.....	2.60	2.60	2.60	2.55
Barbed wire, galv., Chicago dist. mill.....	2.65	2.65	2.65	2.60
Tin plate, 100 lb. box, P'gh.....	\$4.75	\$4.75	\$4.75	\$5.00

## Rails, Billets, etc.

Per Gross Ton:

	July 26, 1932	July 19, 1932	June 28, 1932	July 28, 1931
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	32.00	32.00	32.00	34.00
Rerolling billets, Pittsburgh.....	26.00	26.00	26.00	29.00
Sheet bars, Pittsburgh.....	26.00	26.00	26.00	29.00
Slabs, Pittsburgh.....	26.00	26.00	26.00	29.00
Forging billets, Pittsburgh.....	33.00	33.00	33.00	35.00
Wire rods, Pittsburgh.....	37.00	37.00	37.00	35.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.....	1.60	1.60	1.60	1.60

## Old Material

Per Gross Ton:

	July 26, 1932	July 19, 1932	June 28, 1932	July 28, 1931
Heavy melting steel, P'gh.....	\$8.25	\$8.25	\$8.25	\$10.75
Heavy melting steel, Phila.....	6.25	6.25	6.25	8.75
Heavy melting steel, Ch'go.....	5.25	4.75	5.25	8.75
Carwheels, Chicago.....	5.50	5.50	5.50	10.00
Carwheels, Philadelphia.....	8.00	8.00	8.00	12.00
No. 1 cast, Pittsburgh.....	9.50	9.50	9.00	11.00
No. 1 cast, Philadelphia.....	8.00	8.00	8.00	11.50
No. 1 cast, Ch'go (net ton).....	6.00	6.00	6.00	9.00
No. 1 RR. wrot., Phila.....	8.50	8.50	8.50	10.00
No. 1 RR. wrot., Ch'go (net).....	3.75	3.75	3.75	7.00

## Finished Steel

Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Bars, Chicago.....	1.70	1.70	1.70	1.70
Bars, Cleveland.....	1.65	1.65	1.65	1.65
Bars, New York.....	1.95	1.95	1.95	1.93
Tank plates, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank plates, Chicago.....	1.70	1.70	1.70	1.70
Tank plates, New York.....	1.898	1.898	1.898	1.88
Structural shapes, Pittsburgh.....	1.60	1.60	1.60	1.60
Structural shapes, Chicago.....	1.70	1.70	1.70	1.70
Structural shapes, New York.....	1.86775	1.86775	1.86775	1.85½
Cold-finished bars, Pittsburgh.....	1.70	1.70	1.70	2.10
Hot-rolled strips, Pittsburgh.....	1.45	1.45	1.45	1.55
Cold-rolled strips, Pittsburgh.....	2.00	2.00	2.00	2.15

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

## Coke, Connellsville

Per Net Ton at Oven:

	July 26, 1932	July 19, 1932	June 28, 1932	July 28, 1931
Furnace coke, prompt.....	\$2.00	\$2.00	\$2.00	\$2.40
Foundry coke, prompt.....	3.00	3.00	3.00	3.50

## Metals

Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Lake copper, New York.....	5.37½	5.37½	5.50	8.00
Electrolytic copper, refinery.....	5.00	5.00	5.12½	7.50
Tin (Straits), New York.....	20.80	20.80	19.12½	24.25
Zinc, East St. Louis.....	2.50	2.50	2.75	3.87½
Zinc, New York.....	2.87	2.87	3.12	4.22½
Lead, St. Louis.....	2.55	2.50	2.90	4.22½
Lead, New York.....	2.65	2.65	3.00	4.40
Antimony (Asiatic), N. Y.....	5.00	5.00	5.12½	6.65

# ▲▲▲ The Iron Age Composite Prices ▲▲▲

## Finished Steel

July 26, 1932  
One week ago  
One month ago  
One year ago

1.976c. a Lb.  
1.976c.  
1.97c.  
2.014c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products make 85 per cent of the United States output.

## Pig Iron

\$13.76 a Gross Ton  
13.76  
14.01  
15.54

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## Steel Scrap

\$6.58 a Gross Ton  
6.42  
6.58  
9.42

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	High	Low
1932.....	1.976c., June 28;	1.926c., Feb. 2
1931.....	2.037c., Jan. 13;	1.945c., Dec. 29
1930.....	2.273c., Jan. 7;	2.018c., Dec. 9
1929.....	2.317c., April 2;	2.273c., Oct. 29
1928.....	2.286c., Dec. 11;	2.217c., July 17
1927.....	2.402c., Jan. 4;	2.212c., Nov. 1

	High	Low
1932.....	\$14.81, Jan. 5;	\$13.76, July 5
1931.....	15.90, Jan. 6;	14.79, Dec. 16
1930.....	18.21, Jan. 7;	15.90, Dec. 16
1929.....	18.71, May 14;	18.21, Dec. 17
1928.....	18.69, Nov. 27;	17.04, July 24
1927.....	19.71, Jan. 4;	17.64, Nov. 1

	High	Low
1932.....	\$8.60, Jan. 12;	\$6.42, July 5
1931.....	11.22, Jan. 6;	8.60, Dec. 29
1930.....	15.00, Feb. 18;	11.22, Dec. 9
1929.....	17.68, Jan. 29;	14.08, Dec. 2
1928.....	16.60, Dec. 31;	12.08, July 2
1927.....	16.26, Jan. 11;	12.08, Nov. 23

# Pittsburgh Sentiment Much Improved; Firm Undertone in Scrap Market

▲ ▲ ▲

**P**ITTSBURGH, July 26.—Greatly improved sentiment in the local steel industry has been bolstered further during the last week by increased interest in their requirements by many consumers and very limited gains in the number of orders for some products. The actual volume of releases has not shown much change, but declines have occurred only in tin plate and some finishes of sheets. Structural steel inquiry has improved after several dull weeks, and reinforcing bar business is being helped by highway lettings in Pennsylvania. Demand from the oil industry is holding its own, and substantial improvement is expected momentarily in movement of merchant wire products.

Steel ingot production in the immediate Pittsburgh district is still tending upward, with current operations at about 15 per cent of capacity. Moderate gains in the Valleys and northern Ohio have brought temporary increases in steel making, but low production in the active open-hearths has prevented any definite rise. Wheeling district steel production is unchanged at about 30 per cent of capacity. Tin plate schedules are falling under 45 per cent, and sheet production is easing off from 17 per cent rate achieved last week.

Steel prices are holding their own, but are generally gaining strength as low-priced tonnage is removed from order books and new contracts are taken. Some grades of sheets still show weakness, but are not quotably lower.

Raw material prices are featured by a much stronger undertone in scrap, even though mill buying at higher levels is absent.

## Pig Iron

Shipments have shown no change and new buying is still negligible. Operations in some foundries are expected to be resumed Aug. 1, and a corresponding gain in iron shipments is in prospect. Prices at both Pittsburgh and in the Valleys are well sustained by occasional car lot sales. No test of the basic market has been offered.

## Semi-Finished Steel

Business continues light because of the low operations of non-integrated makers of sheets and strip. Prices on billets, slabs and sheet bars are well maintained at \$26, Pittsburgh.

Consumers taking more interest in steel requirements.

\* \* \*

Improvement of sentiment continues at Pittsburgh.

\* \* \*

Scrap market has firm undertone, although advance has occurred only in turnings.

\* \* \*

Structural steel inquiry improves after several dull weeks.

▼ ▼ ▼

Some producers have inaugurated new extras, establishing a \$2 a ton extra on billets, slabs and blooms from 6 x 6 in. to 10 x 10 in. These sizes formerly took the base price. Forging billets are well held at \$33, Pittsburgh, and wire rods at \$37.

## Rails and Track Accessories

No change in releases is reported, and mill operations are very light. The local rail mill will resume production either next week or the week following on its recent order from the Pennsylvania. No accessories have been taken for this tonnage and none may be bought, as no immediate plans for laying the rails have been made.

## Cold-Finished Steel Bars

Cold-finishing companies are still spending considerable time in educating the trade with regard to the new card of extras issued two months ago. Generally speaking, the new plan is meeting with considerable success, and large buyers are being held strictly to the price of 1.70c., Pittsburgh, for lots of 10,000 lb. or more for shipment to one destination at the same time. Current production averages 10 to 15 per cent.

## Tubular Goods

Pipe makers have taken a few fair-sized orders in the last week, two of which were for building projects. A Valley mill received 3500 tons for use in the foundation of the Federal Courthouse at New York, and an Eastern producer booked 1200 tons for the Newark, N. J., post office. The recent report that the Lycoming Natural Gas Co. might buy 8000 tons of 20-in. pipe for use in central New York

seems to be rather indefinite as no inquiry has been issued. Most of the other line pipe projects in the market call for special financing and are not moving forward very rapidly. Oil country goods are still moving in comparatively good volume but no particular gains are reported. Other kinds of pipe are very dull.

## Wire Products

This market reflects no actual gain in tonnage but inquiry seems to be a little heavier. This is particularly true in the case of merchant wire goods on which jobbers in some localities are showing a tendency to build up their stocks. Movement of manufacturers' wire is steady but very light. Prices are unchanged with manufacturers' wire quoted at 2.20c., Pittsburgh, and nails at \$1.95 a keg.

## Bars, Plates and Shapes

Inquiry for fabricated structural steel is still coming out in fair volume in the country as a whole, with highway bridges predominating. Awards have been rather light this month, but some of the fabricators have built up fair backlogs. Reinforcing bars are improved by highway lettings in Pennsylvania, which have been rather heavy this month. Another letting is scheduled for Aug. 5, which will bring out additional tonnage. Plates are quiet, but prospects are favorable for tank business. Railroad car repairs are also expected to take a gradually increasing amount of steel during the fall. Merchant bars are dull but the number of orders seems to be improving. Quantities are generally very small. Alloy steel bars are very quiet and are being adversely affected by declining automobile production. Prices on bars, plates and shapes are holding at 1.60c., Pittsburgh, with concessions on new business very rare.

## Sheets

Market sentiment continues to improve, but releases show no significant gains and may be even lighter because of prospective reduced shipments to the Ford Motor Co. Some of the other automobile makers are taking a somewhat larger tonnage than had been expected this month but the prospect of further curtailment in many plants during August indicates a rather poor month for sheets. In the meantime other consuming lines look much more hopeful even though definite gains in tonnage are gen-

erally lacking. Operations last week averaged about 17 per cent of capacity and will be no higher in the current period. A decline would be more likely.

Prices are holding on most finishes, although weakness persists in one or two grades. Mills are anxious to get low-priced business off their books, but thus far have been reluctant to cancel tonnage in some products which has not yet been ordered out.

#### Tin Plate

Production schedules are no lower in the aggregate this week, although the output of some producers has shown further declines. These have been partly offset by gains elsewhere but production is currently not above 45 per cent and probably lower. The container manufacturers are allowing their inventories to drop as much as possible in anticipation of a lower official price next year. Crop reports are more favorable, particularly in the case of tomatoes.

#### Strip Steel

Demand is holding its own, although a decline is expected next month because of seasonal inactivity in the automobile industry. Miscellaneous consumers are not taking enough strip steel to make much of a change in aggregate movement. Prices are well held at 1.45c. to 1.50c., Pittsburgh, on hot-rolled strip, and 2c. is the general minimum on cold-rolled material.

#### Coke and Coal

Business is more quiet than ever, as foundries show no tendency to improve their melt. Furnace coke is also very dull and prices are weak. Movement of coal to the larger consumers in the district is negligible.

#### Scrap

Improved sentiment in the steel industry has practically eliminated distress scrap from the local market, and offerings at low figures have almost disappeared. No mill purchases have been made to reaffirm the current quotations of \$8 to \$8.50 on No. 1 heavy melting steel, but the market is considered strong at that range. Expected purchases by one large consumer have been delayed until next week, and dealers are showing much less interest than heretofore in placing orders on their books. Hydraulic compressed sheets are stronger in sympathy with steel and because of a tighter situation at Detroit. Machine shop turnings have been advanced 50c. a ton because of resumption of shipments at two important consuming points. The other grades of scrap are unchanged, but display a stronger tone in line with the more important grades. The monthly list of the Baltimore & Ohio Railroad, closing Aug. 1, contains 3100 tons of scrap, including 600 tons of No. 1 heavy melting steel.

## Pig Iron Releases Take Spurt at St. Louis

ST. LOUIS, July 26.—Specifications for pig iron against contracts have taken a spurt during the last ten days and shipments thus far in July are 30 per cent ahead of the same period last month, it is reported by the St. Louis Gas & Coke Corp'n. Total specifications are more than 1000 tons ahead of what had been expected, and include lots of 30 to 200 tons, all foundry iron. Stove plants report that mail order houses are preparing to place fall business, and one manufacturer in the St. Louis trade territory has recalled 200 employees to resume operations. There is very little malleable or basic business. Spot foundry business is light. The market continues firm at unchanged prices.

#### Steel

Open-hearth furnace operations in the district continue at about 12 per cent of capacity. Buying of plates, shapes and bars is light, although the price structure remains firm.

#### Scrap

Recent purchases of scrap by dealers from railroad lists have resulted in declines of 25c. a ton on No. 2 heavy melting steel and No. 2 railroad wrought, \$1 a ton on rails for rolling, 50c. a ton on cast iron carwheels and 75c. a ton on railroad malleable. A leading interest has further postponed expected purchases of heavy melting steel. Railroad lists: New York, Chicago & St. Louis, 26 carloads; Mobile & Ohio, 16 carloads.

## Outlook in Pig Iron Improved at Buffalo

BUFFALO, July 26.—The outlook in pig iron has improved materially, in the view of local producers. While foreign iron continues to dominate Eastern markets, sellers here who bid on a fairly large inquiry of the past week were only slightly more than \$1 out of line in some cases, and are now hopeful that the situation may change in their favor. July shipments will run slightly below those of June, but buying has improved somewhat and August may turn the trend. Sellers look for September business to be the best of several months, possibly of the entire year. Three furnaces continue to produce iron here, one being a merchant stack, the others being operated by steel works for their open-hearth units.

#### Steel

Structural demand continues to broaden, providing the brightest side of the finished steel market in this territory. The McClintic-Marshall Corp'n. has booked an order for 2500 tons of fabricated shapes for a new State armory here and many other

smaller projects are pending for early closing. Reinforcing bar demand also is improving, the largest inquiry being one of substantial tonnage for a veterans' hospital at Batavia, for which the Morley Construction Co., Kansas City, has just been awarded the general contract. Sheet mills in the district continue to operate at about 25 per cent of capacity. Wire works are operating at 25 per cent of their open-hearth capacity. There will be seven open-hearths producing steel, of 37 in the Buffalo district, during the week of July 25. Last week four furnaces were operated.

#### Scrap

There is no inquiry for scrap, and no contracts have been made. Sales in Youngstown and other points appear to establish Buffalo's nominal quotations near the top of recently quoted ranges. Dealers have made no deliveries of large size in the past week.

## Canada Importing Cast Scrap from United States

TORONTO, ONT., July 26.—While there is a better tone in the iron and steel industry of Canada, new business continues dull. Merchant pig iron sales for the past couple of weeks were slightly higher than in the previous period, sales totaling around 600 tons per week. Increased demand was due solely to the fact that several buyers were in the market at one time. No future delivery contracts have been closed and producers have very little tonnage on their books.

Iron and steel plants are now running intermittently—that is, a plant may operate for a couple of weeks at a stretch and then close down for a week, while others are on a three or four-day week basis. It is now estimated that the industry is on an operating schedule of 15 to 20 per cent. Prices are firm, but unchanged.

In the scrap market, No. 1 machinery cast is scarce and dealers are turning to the United States for supplies. Shipments are coming in at almost regular intervals and dealers are picking up all the material of this nature offered. Stove plate and malleable are moving slowly, with the latter being short in supply. Other grades are in small demand.

## Scrap Inactive at Detroit

DETROIT, July 26.—There is still a notable lack of interest on the part of consumers in the local scrap market. Dealers do not desire to add further to stocks of certain items, even though tonnage is offered to them gratis if they will pay the transportation from the producers' plants to their yards. Prices have not changed.



# Chicago Hopes Sustained by Good Crop Reports and Improving Farm Prices

**C**HICAGO, July 26.—Recent events have brought further reduction in ingot output, but below the surface of daily occurrences are what appear to be conditions which are working toward business improvement. The closing down of another rail mill has lowered ingot production to 12 or 13 per cent of capacity.

New orders and specifications for finished steel are not holding at recent levels, but inquiries indicate that many consumers are keeping a closer watch on the market. Inquiries for pig iron are slightly better, while the scrap market is very sensitive, with bid and asked prices some distance apart. Dealers are showing a strong tendency to resist offers even at present quotations. Heavy melting steel is quoted 50c. a ton higher, the first advance since January, 1931. A steel mill will buy 5000 tons of scrap, and Canadian mills are seeking a like tonnage in this market after what appears to have been a failure to get desired tonnages from Duluth and Detroit at the prices offered.

Prices throughout the market are well established. Cast iron pipe makers are holding quotations within narrower limits.

There is little change in conditions in rural sections of the country. Crops are generally in good condition and this fact, combined with better farm products prices, is sustaining the improved sentiment.

## Pig Iron

Fresh inquiries, while not large, are more numerous and reports are insistent that many consumers are giving much closer attention to stocks on hand, the desire being not to cut closer than at present and even in some instances to carry more iron on the ground. A disturbing factor in the market is some resale iron, which is being offered in small lots. In general the melt is very low, though here and there is a foundry schedule that is gaining. Pig iron prices remain steady at \$15.50 a ton, local furnaces.

## Bars

Both new sales and specifications of bars are down, and inquiries for mild steel bars give little promise for the immediate future. Stocks in the hands

▲▲▲  
Heavy melting scrap 50c. a ton higher, the first advance since January, 1931.

\* \* \*

Good crops and stronger farm products prices help to sustain improving sentiment.

\* \* \*

Volume of business has not improved, and ingot output is slightly lower because of shutting down of two rail mills.

▼▼▼

of consumers are so low and producers' rolling schedules are so irregular that the matter of delivery is becoming increasingly important. This is especially true when special analysis is involved. Consumers are in some instances seeing the folly of trying to continue to meet their customers' demands when mills cannot supply steel in less than three weeks, which is quite often the case. Releases by Chevrolet are being sustained at the new higher rate, but in general the automotive trade is taking less steel. Farm implement manufacturers find increasing sales of light equipment, but they have not yet formed plans for fall manufacturing. Barn equipment manufacturers are still in the market for rail steel bars and their needs are slowly growing.

## Bolts, Nuts and Rivets

Releases and new orders are slightly more liberal. Sellers do not visualize much of a change in the near future but are looking to September rather hopefully.

## Sheets

Shipments have dropped off to a range from 15 to 18 per cent of capacity. Hot mills started the week earlier than usual, but orders at hand did not give promise of more than three days' operation for the units that were started.

## Cast Iron Pipe

One of the most promising developments in this market is the fact that prices are firmer. Most sellers are holding to a range of \$30 to \$33 a ton, Birmingham, for 6-in. diameter and larger. Large tonnage projects are still absent, and at the moment

small lots are fewer in number, but new developments still hold promise.

## Wire Products

A moderate but nevertheless important change upward is taking place in demand from agricultural areas. The increased tonnage is well spread, though the Northwest is more active than other districts. Use of wire by manufacturers is slightly lower. Ford is reported to be preparing plans for the fourth quarter.

## Reinforcing Bars

Shipments of highway steel are steady and new purchases are in fair volume. Present programs are not so heavy as a year ago. The upturn in small awards, noted earlier in the month, is still in evidence, but little of this tonnage is represented by private work.

## Plates

Among finished steel products, plates are the least in demand. There is a slightly better tone to railroad purchases, but the tonnage involved is not in proportion to the number of men called back to railroad shops.

## Hot-Rolled Strip

Shipments of this commodity are slightly larger because of resumption of automobile frame plant activity at Milwaukee.

## Rails and Track Supplies

Both Chicago rail mills are idle and the only business in sight is a probable purchase by the Northern Pacific, which usually takes at least part of its tonnage by water shipment.

## Structural Material

Fabricators are encouraged by the fact that inquiries and purchases by railroads appear to be turning upward.

## Scrap

The pulse of this market is quickened by an offer of Canadian mills to buy 5000 tons of heavy melting steel at \$5.25 a gross ton, delivered Chicago switching district. This offer has been declined and a counter offer made of \$5.75. A mill to the south of Chicago is prepared to take 5000 tons of country mixed. Demand for several of the cast grades is more active. Two sizeable local scrap yards are being liquidated.

# Eastern Pennsylvania Trade Looks For Upturn Soon

Actual Business Has Not Improved, but Sentiment Is Much  
Better—Scrap Market Poised for a Rise

**P**HILADELPHIA, July 26.—Measured by actual tonnage, steel business in this district has shown no improvement, but at least there has been no further decline, and orders for some products are larger numerically if not in total volume. Despite the lack of concrete betterment, the market has gained considerably in tone, there being a general air of expectancy that an upward trend will develop in the not distant future, and this feeling is not confined to sellers, but has spread throughout the ranks of steel consumers, even though many of them are unable to predict definitely when they will be taking more material.

With the possible exception of structural steel, which has been very dull this month, July has shown no retrogression, barring the dip in the holiday week at the beginning of the month. In structural steel, prospects are somewhat brighter. Bids have been requested by Aug. 26 on about 15,000 tons for the Philadelphia Post Office. Two or three local jobs, on which bids went in some weeks ago, may be awarded this week. A Government dam project in West Virginia calls for 5000 tons of steel, mostly plates.

In steel ingot output, some of the ground recently lost has been regained, and the rate for the district is estimated at about 14 per cent. The American Bridge Co. ran three open-hearth furnaces at Pencoyd all of last week, but has shut them down this week, with the possibility that they may resume next week. Meanwhile, the shape mills at Pencoyd are rolling this week. The Alan Wood Steel Co., whose plant was virtually idle for a fortnight or so, ran one open-hearth furnace and its plate and sheet mills last week, and is continuing this schedule this week. The Lukens Steel Co. is using three of its 16 basic open-hearth furnaces, and its plate mill schedules have been fairly satisfactory, considering the general conditions. The Worth and Central plate mills each have one open-hearth furnace on. The Bethlehem Steel Co. is now making ingots at a 14 per cent rate.

The firmness of finished steel prices is a matter of general comment.

## Pig Iron

Sales of pig iron are mostly single car lots, and even on such business foreign iron continues to be a strongly competitive factor, being offered at

prices which domestic furnaces are in many instances disinclined to meet on the ground that they are below costs of production. Royal Dutch foundry iron is available at \$13, f.o.b. cars at dock, and concessions from this figure are reported. Domestic producers generally quote \$13.50, furnace, as a minimum. The Union Iron Works Co., Washington, is in the market for 120 tons of gray iron castings for its contract at the Library of Congress.

## Plates, Shapes and Bars

To the general run of trade, prices on plates are firmly quoted at 1.70c. a lb., Coatesville or Sparrows Point, while the same figure rules on shapes at consumers' nearest mill. The 1.60c., Pittsburgh, price on bars is seldom questioned. The steel mills derive considerable satisfaction from the firmness of prices in view of the continued small volume of buying. About 450 tons of concrete bars will be required for State highway work in Bucks County, Pa., and 250 tons will be used in the Bell Telephone Co.

## Another Blast Furnace Idle in Alabama

**B**IRMINGHAM, July 26.—The pig iron market is still without relief. New tonnage is scattered and small, as foundries continue to wait until orders are in sight before buying or giving shipping instructions. July shipments have been lagging behind those of June, and the downward trend has not yet been checked. The quotation of \$11 for the Southern market is being maintained. Furnace operations, after being on a four-furnace basis for the past several months, are again being adjusted. On Sunday Sloss-Sheffield Steel & Iron Co. banked its furnace and this is to be out of production for at least two months. Last week Republic Steel Corp. changed its active furnace from spiegeleisen to ferromanganese. This will produce for a week or ten days and then the furnace will be blown out. Including this stack, there are only three active furnaces in Alabama, the other two being the Fairfield No. 6 furnace of the Tennessee company, which is on basic, and the Woodward No. 2 furnace, which is on foundry. Pipe tonnage has shown no material improvement. National Cast Iron Pipe and American Cast Iron Pipe are each operating two plants on restricted sched-

building at Eighth and Cherry Streets.

## Warehouse Business

The new schedule of prices for steel out of stock, under which the minimum price applies for 15,000 lb. or more of one item, with extras for smaller lots, has not been in effect long enough for a thorough test, but thus far has been successfully applied. Warehouse business has held to the level of June.

## Scrap

A decidedly more hopeful feeling is to be found in the scrap trade. Brokers believe that the deflation of values has gone so far that a quick rise of \$1 or \$2 a ton on many grades would accompany any marked improvement in steel production. The increased use of heavy breakable cast by some steel plants recently has created a scarcity of this grade in the immediate vicinity, and, if mills are obliged to reach out farther for their supplies, the item of freight rates alone would add to the delivered prices.

## Imports

Structural shapes led in imports at Philadelphia last week, 169 tons having come from Germany and 153 tons from Belgium. Other steel imports were 112 tons of steel bands and 30 tons of rounds from Belgium; 12 tons of muck bars also came from Belgium. The only pig iron receipt was 62 tons from British India.

ules, but August operations are uncertain. A nominal base of \$32 to \$33 is still maintained, but concessions are general.

## Steel

The market is listless and without any particular demand. Weekly tonnages have varied little in the past two months, and July volume, to date, is just about the same as for the same period last month. Prices remain unchanged. Fabricators have booked only a small amount of new tonnage in the past week or ten days, but they are looking forward to several post office awards which will involve fair tonnages of both structural steel and reinforcing bars. The Bessemer plant of the Nashville Bridge Co. will fabricate about 200 tons of the steel which will be required for the five cotton barges recently awarded the company. The balance of the work will be handled at the company's Nashville plant. Open-hearth operations have been the same for the past three weeks, the Tennessee company operating four units at Fairfield and Gulf States Steel two at Alabama City.

## Scrap

Demand is still dragging and there is little interest in new tonnage. Shipments last week were small. Prices are unchanged.

# New York Iron and Steel Buying at Approximately June Level

## Republic Steel Awarded 3500 Tons of Pipe for Federal Courthouse Foundation—Philippines Take British Steel

NEW YORK, July 26.—Although sentiment in the local steel trade has improved as a result of the stronger tone of the stock and bond markets and the recent advances in the prices of staples, steel specifications have not yet shown a definite turn for the better. The best the sales offices can report is that this month's bookings closely approximate those of June, but some of them report losses of 15 per cent or more. The decline in tin plate specifications is particularly disappointing, although it is still felt that canners' packs may be increased if general business conditions continue to show an improved tone.

Public works is still the mainstay for tonnage business. The George J. Atwell Foundation Corp., which has the general contract for the new Federal courthouse in this city, has placed an order for 3500 tons of 12 $\frac{1}{4}$ -in. O. D. foundation pipe to the Republic Steel Corp.

Mills complain because of what they consider to be unreasonable demands of customers. They are not only required to accept very small and undesirable orders—frequently of warehouse character—but they are expected to make unusually prompt deliveries. Naturally service of this kind increases costs at a time when there is no chance of getting an adequate return in terms of prices.

## Valley Mill Gets Order for 3500 Tons of Pipe

YOUNGSTOWN, July 26.—Demand for finished steel products at Youngstown mills is running somewhat below June levels, but has shown no further recession in the last two weeks. This fact, in addition to a slight increase in inquiries, seems to indicate that the next change must be for the better and general feeling in the district is distinctly improved. Current orders are practically all for very small quantities and are practically all figured in pounds rather than tons. Only the automobile industry is releasing tonnage business, and volume from this source is declining. An exception to the general run of orders is one for 3500 tons of 12-in. electrically welded pipe for foundations for the Federal Court House in New York, which was placed with the Republic Steel Corp.

Current steel production is at about the same level which has prevailed

A matter of concern to export branches of steel companies is that the Philippines, heretofore regarded as a rather sure market for American products, are commencing to take British material, presumably on account of the depreciation of the pound sterling. A delivery of 2000 tons of British sheets in the islands in June is reported.

### Pig Iron

Little change is discernible in the character of pig iron demand. Although expectations of broader foundry activity in the fall are becoming more pronounced, buyers are still hesitant about covering beyond current bare needs. Except in scattered cases, foundry operations are extremely sluggish, with many melters running only one day a week. A slight improvement in bookings is indicated in total sales in the past week of 1500 tons, which compares with 1000 tons in each of the two preceding weeks. The Ford Motor Co. is inquiring for 500 tons of ferromanganese for August-September delivery.

### Scrap

This market continues at dead center. Releases to Eastern mills are still spotty. Buying is in meager volume and has had no influence on prices, which are nominally unchanged.

since the second week of the month, following the holiday suspension. Although about 20 per cent of the open-hearth furnaces in the Valleys and Northern Ohio outside of Cleveland are nominally in production, they are making steel at about 15 per cent of the district's total capacity. Blast furnace and coke ovens are also running at a reduced rate even though considered active, as steel makers generally are anxious to keep their raw material stocks at a minimum. Nevertheless, the recent purchase of 25,000 tons of scrap by a large interest for consumption in the Valleys indicates that current low prices for this material are attractive to buyers even though there is no immediate need for the supplies.

Large consumers of steel in the Valleys report a quickening of interest among their customers in the last few days. This has not yet been reflected in orders for steel products, but offers further evidence of a probable gain in demand during the early fall. Fabricators of steel tanks are particularly optimistic, and steel barrel

makers are already receiving somewhat better business from the oil industry. Makers of steel building products are experiencing little improvement in demand for standard products, but new lines are meeting with some success. A maker of aluminum chairs in the district is unusually busy. Steel office furniture continues rather dull.

Steel prices are generally unchanged and are remarkably stable. With operations as low as they are, desirable orders might be expected to bring out sharp concessions, but scarcely any price irregularity is reported. Strip makers are well pleased with the success of the single price on hot-rolled material, as practically all business on old contracts has been ordered out.

## Pacific Coast Market Has Better Tone

SAN FRANCISCO, July 25.—A noticeably optimistic tone has been apparent in the California market during the past week, based not so much upon any definite events or developments, but upon the general strengthening of commodity prices, the award of a number of long-withheld steel contracts and an increase in the volume of prospective and pending tonnage. Although recent lettings have been predominantly in southern California, the San Francisco market is more promising than at any time this year. Psychologically the Shrine conclave at San Francisco, the Rotary convention at Seattle, the Rose Festival at Portland and the opening of the Olympic Games at Los Angeles are favorably influencing the general tone on the Pacific Coast far more than would appear on the surface.

Pig iron quotations have been lowered for the Pacific Coast market in recent weeks to harmonize with those at Eastern points, although there is practically no movement of either scrap or pig iron in the Far West. No. 3 Utah iron is now quoted at \$13 a ton at Provo furnace, or at \$17.625 at Pacific Coast terminal points in carload lots.

Santa Monica, Cal., will open bids on Aug. 5 for a municipal breakwater and pier 2000 ft. long and 37 ft. wide that will require approximately 3000 tons of reinforcing bars, 8-in. H-sections for steel piling and  $\frac{3}{4}$ -in. plate for toe protectors. The McClintic-Marshall Corp. has been awarded the contract for a 2,000,000 cu. ft. gas holder for the Naval dirigible base at Sunnyvale. This was originally placed in February with the Stacey Mfg. Co.

During the past week total awards of approximately 3500 tons of major structural projects were reported, while new inquiries and added future prospects call for more than 6000 tons.



# Cleveland Trade Looks for an Upturn About Sept. 1

**Belief Gains That Business Cannot Stay as Bad as It Is—Outlook for August Not Particularly Promising**

CLEVELAND, July 26.—The feeling that steel business and that of consuming industries will show quite an upturn about Sept. 1 has become more persistent, although there is little on which to base the improved sentiment further than the belief that business cannot stay as bad as it is much longer. Early fall has been set as the time of recovery because a seasonal gain usually appears after the mid-summer months.

Steel ingot production in Cleveland this week is unchanged at 17 per cent of capacity, which is the rate at which local plants have operated since July 1.

Business in the heavier rolled products, mostly in bars, took an upward spurt in both size and number of orders during the latter part of the week, but slumped off again early this week. The spurt evidently was due to depletion of customers' stocks rather than to any increase in their activities. Orders in nearly all cases were for immediate requirements. Demand for sheet and strip steel continues very light, and finishing mill operations are irregular. The volume of finished steel business in this territory during July will show little change as compared with June.

In spite of the prevailing optimism, the outlook for August is not promising. Production in the automotive industry is being reduced and orders with some of the parts and accessory makers have been held up, resulting in suspensions of steel shipments. Little new business is coming from the motor car manufacturers, although the Chevrolet company has placed additional steel orders for 5000 cars. It is understood that the Willys-Overland Co. has a production schedule of 2500 cars for August as compared with 3000 for July. Estimates of motor car production for the remainder of the year are 630,000 units, of which 335,000 are scheduled for the Ford Motor Co. This compares with a total of 912,000 units for the first half.

## Pig Iron

Activity continues below the June volume in shipments, sales and inquiries. While producers see no prospects for an early improvement, they look for some gain in the demand during the latter part of August. Some automobile foundries are shut down and others are doing little. The radiator industry, which is melting little iron this month, will increase operations in August. Consumers are buying iron in car lots as needed. One

producer sold 1000 tons during the week. Prices are untested at \$14 to \$14.50, Cleveland, for foundry and malleable iron for outside shipment and \$15.50 for local delivery.

## Sheets

Demand has further declined. Very little business is coming from the automotive industry and consumers in other fields are inactive. Refrigerator manufacturers stocked up dealers rather heavily before the new Federal tax was applied, and production by this industry during August will be very low. Stove manufacturers are doing little and orders from this source are very limited. Little business is coming from the metal furniture industry and barrel manufacturers. Prices generally are well maintained.

## Strip Steel

A little spurt in business developed in Detroit during the week, which is the only bright spot in the market. Leading makers of automobile accessories in Indiana have further reduced operations and curtailed shipping orders. The 1.45c. price on hot rolled strip appears to be well maintained to large buyers. Cold-rolled strip is steady at 2c., Cleveland, in spite of reports of an occasional concession by a small producer.

## Iron Ore

Ore shipments from the Lake Superior district up to Aug. 1, or for the first half of the shipping season, will not reach 1,000,000 tons, as is indicated by the rate of movement so far this month. Shipments for the first 22 days of July were at the rate of 578,000 tons for the month, making a total to Aug. 1 of approximately 966,000 tons. Present estimates are that the season's movement will not exceed 4,000,000 tons and is likely to be quite a little less than that amount. With stocks in furnace yards and on docks 12,000,000 tons in excess of normal, consumers are endeavoring to reduce inventories and generally are taking only those grades of ores needed for their mixtures.

## Bolts and Nuts

Demand continues very slow from all sources. Jobbers' sales are slack and their stocks low. The Ford Motor Co. continues to order nuts fairly freely. Little business is coming from other automobile companies. The industry is operating at about 15 per cent of capacity.

## Bars, Plates and Shapes

Orders for merchant bars increased somewhat during the past week, but business in plates and structural shapes continues light. A Cleveland contractor placed 350 tons for the Thompsons County, N. Y., court house. The Ohio Highway Department will take bids Aug. 2 for a bridge over the Great Miami River in Butler County, requiring 680 tons of structural steel and 275 tons of reinforcing bars. Other lettings include nine small bridges, taking 150 tons of reinforcing bars. Prices are firm at 1.65c., Cleveland, for bars and 1.60c., Pittsburgh, for plates and shapes.

## Scrap

The market is almost at a standstill. Some dealers have virtually closed down their yards because they are unable to make sales. In only a few cases are mills taking shipments against outstanding orders. Prices are unchanged, but nominal.

## Stalemate Unrelieved in Cincinnati Market

CINCINNATI, July 26.—Continued foundry inactivity is reflected in the low pig iron demand. Sales the past week did not exceed 500 tons, while shipments against old contracts were light. Those foundries still operating are not averaging more than one heat a week. Prices on both Northern and Southern iron are unchanged, although automotive parts manufacturers are reported to be pressing for lower material prices. Scattered inquiries for carload lots constitute the pending business. Shipments of coke are behind the June rate.

Demand for sheets has returned to the average summer rate, following a slight spurt. Mill operations are varying in keeping with the spotty demand.

Scrap prices are nominal, sales being exceedingly light.

## New England Pig Iron and Scrap Trade Dull

BOSTON, July 26.—Pig iron sales made by local furnace representatives the past week were confined to scattered car lots. The 700 tons of special analysis iron required by a Massachusetts machinery manufacturer will be placed this week. Indications are the business will be split two and possibly three ways. This iron probably will be bought at just under \$17 a ton, delivered.

Aside from a slightly more optimistic feeling among brokers, the scrap situation has not changed. Business is very limited for Pennsylvania delivery. New England foundries are buying textile and machinery cast on a hand-to-mouth basis.

# Fabricated Structural Steel

## Awards in Larger Volume—New Projects Decline Slightly

**I**NCLUDING 5400 tons for a post office in Newark, N. J., the largest award for the week, and 2500 tons for a State armory in Buffalo, bookings totaled 16,200 tons, compared with 11,900 tons in the previous week. New projects call for about 13,100 tons, of which 9000 tons is required for bridges, including 3000 tons for a bridge over the Canadian River at Bridgeport, Okla. Awards follow:

### NORTH ATLANTIC STATES

Oxford, Me., 125 tons, State bridge, to Lackawanna Steel Construction Corp.  
New Haven, Conn., 160 tons, alterations to Harkness dormitory, Yale University, to Lehigh Structural Steel Co.  
Peekskill, N. Y., 160 tons, Standard Brands, Inc., building, to McClintic-Marshall Corp.  
Albany, N. Y., 130 tons, abattoir, to Shippers Car Line Corp.  
Ithaca, N. Y., 350 tons, Tompkins County court house, to McClintic-Marshall Corp.  
Kings Ferry, N. Y., 220 tons, central grade school, to Daniel B. Sayre, Syracuse.  
Newark, N. J., 5400 tons, post office, to McClintic-Marshall Corp.  
Buffalo, 2500 tons, armory, to McClintic-Marshall Corp.  
Collins, N. Y., 240 tons, highway bridge in Erie County, to McClintic-Marshall Corp.  
Hoboken, N. J., 200 tons, wax paper building for R. B. Davis & Co., to H. R. Goeller, Inc.  
Allentown, Pa., 700 tons, building for Freihofer Baking Co., to Bethlehem Fabricators, Inc.

### THE SOUTH

Woods County, Tex., 250 tons, highway bridge, to Austin Brothers Bridge Co.  
Uvalde County, Tex., 550 tons, highway bridges, to Missouri Valley Bridge & Iron Co. and Petroleum Iron Works.

### CENTRAL STATES

Marseilles, Ill., 780 tons, bridge over Illinois River, to Mississippi Valley Structural Steel Co.  
Chicago, 150 tons, foundation for Cook County hospital nurses' home, to Hansell-Klock Co.  
Chicago, 180 tons, grain storage building, to Gage Structural Steel Co.  
Minneapolis, 1975 tons, post office, to Worden-Alten Co.; previously reported as 1000 tons.  
Duluth, Minn., 1516 tons, Medical Arts building, to American Bridge Co.  
Milwaukee, 580 tons, Burlington subway for Milwaukee Road, to Milwaukee Bridge Co.  
Trempealeau County, Wis., 300 tons, highway bridges, to Lakeside Bridge Co. and Milwaukee Bridge Co.  
Milwaukee, 100 tons, transit shed for Milwaukee Board of Harbor Commissioners, to Lakeside Bridge & Steel Co.  
Richland County, Wis., 140 tons, bridge, to Lakeside Bridge & Steel Co.  
Jefferson City, Mo., 195 tons, post office, to Fort Pitt Bridge Works Co.  
Cleveland, 500 tons, sheet steel piling for easterly sewage disposal plant, to Inland Steel Co.

### WESTERN STATES

Silvana, Wash., 100 tons, Pilchuck River State highway bridge, to Wallace Bridge & Structural Steel Co.  
San Francisco, 160 tons, army dock extension at Fort Mason, to Judson-Pacific Co.

### NEW STRUCTURAL STEEL PROJECTS

#### NORTH ATLANTIC STATES

Westwood, Mass., 845 tons, four State bridges.  
Boston, 516 tons, pathological building, city hospital.  
Dedham, Mass., 900 tons, two State highway bridges.  
Beacon, N. Y., 400 tons, building for State Hospital for Insane.  
Rensselaer, N. Y., 250 tons, building for General Analine Works.  
Philadelphia, 15,000 tons, post office building; bids requested by Aug. 26.

Fairview, Md., 300 tons, State highway bridge.  
Cortland County, N. Y., 500 tons, State highway bridge; bids taken July 26.  
Erie County, N. Y., 120 tons, bridges, Holmes & Murphy, Buffalo, general contractors.  
Buffalo, 100 tons, pattern house, Worthington Pump Co.; bids in.

### CENTRAL STATES

State of Ohio, 680 tons, highway bridge in Butler County.  
Defiance, Ohio, 500 tons, State highway bridge over Maumee River.  
Hamilton, Ohio, 700 tons, State highway bridge over Miami River.  
Bay City, Mich., 325 tons, County building.  
Chicago, 600 tons, Chrysler building, for World's Fair.  
Garrison, N. D., 150 tons, bridge across Missouri River.  
Bismarck, N. D., 3200 tons, State Capitol building, previously reported as 2000 tons; Lundoff Becknell Co., general contractors.  
State of Missouri, 1000 tons, highway bridges.

### SOUTHWEST

Bridgeport, Okla., 3000 tons, highway bridge over Canadian River.

### WESTERN STATES

Raymond, Wash., 700 tons, Willapa River State highway bridge; bids close Sept. 13.  
Roseburg, Ore., 270 tons, bridge at Veterans' Home; Portland Bridge Co. low bidder.  
Santa Monica, Cal., 575 tons, B section piling for municipal breakwater; bids close Aug. 5.

### FABRICATED PLATE

#### AWARDS

Santa Clara, Cal., 260 tons, tanks to Pittsburgh-Des Moines Structural Steel Co.  
Monrovia, Cal., 750 tons, four gas holders for Southern Counties Gas Co., to Chicago Bridge & Iron Co.

### NEW PROJECTS

Charleston, W. Va., 3000 tons, mostly plates, for rolling dams for Government project.  
Youngstown, Ohio, 1000 tons, stand pipe; Youngstown Boiler & Tank Co., low bidder.  
Santa Monica, Cal., 1000 tons, toe protectors for municipal breakwater; bids close Aug. 5.  
Mare Island, Cal., 200 tons, fuel oil tank at navy yard; bids close Aug. 19.

## Pipe Lines

West Michigan Gas Co., Muskegon, Mich., affiliated with Michigan Natural Gas Pipe Line Co., both recently organized by John L. Borden, president, Old Dutch Refining Co., Muskegon, and associates, has asked permission of State Public Utilities Commission for sale of preferred stock totaling \$500,000. Fund will be used in part for steel pipe line from oil fields at Mount Pleasant, Mich., to Muskegon and vicinity. Company also plans a natural gas pipe line from oil fields near Brownfield, Mich., to Rice Rapids, Mich., about 31 miles.

Atlantic Pipe Line Co., affiliated with Atlantic Oil Producing Co., 260 South Broad Street, Philadelphia, both subsidiaries of Atlantic Refining Co., same address, has begun surveys for new pipe line from oil field district in Deval County, Tex., to company terminal at Aransas Pass, Tex., about 80 miles.

Wachata Gas Co., Inc., Dallas, Tex., John M. Bailey, secretary, has secured franchise for furnishing gas at Talihna, Okla., and vicinity, and contemplates pipe line from gas wells. It is proposed to sell at wholesale to a distribut-

ing company, in which H. A. Shellenberger, Muskogee, Okla., is interested, for local supply. Last noted interest will install distributing pipe lines.

Republic Steel Corp., Youngstown, has secured contract for about 26 miles of pipe made from special rust-resisting steel, for installation in new trans Atlantic liner, *Washington*, of United States Lines, New York, now being constructed at yard of New York Shipbuilding Co., Camden, N. J.

## Reinforcing Steel

### Awards 3400 Tons — New Projects 4400 Tons

#### AWARDS

Brooklyn, 100 tons, packing house, to Jones & Laughlin Steel Corp.  
State of New Jersey, 290 tons, bridge over Shark River, route 4, Belmar-Avon, to Kalm Steel Corp.  
Pittsburgh, 100 tons, Mount Washington Roadway for City of Pittsburgh, to Truscon Steel Co.  
State of Illinois, 150 tons, bridge across Sag Channel, to an unnamed bidder.  
State of Illinois, 200 tons, highway work, to Calumet Steel Co.  
Minneapolis, 800 tons, post office, to Concrete Steel Co.  
Cannahan, Ill., 100 tons, bridge footings, to Concrete Steel Co.  
State of Kentucky, 100 tons, road work, to Calumet Steel Co.  
Prescott, Ariz., 250 tons, Banning Creek dam, to Blue Diamond Corp., Ltd.  
Los Angeles, 175 tons, West and Venice boulevards crossing, to Soule Steel Co.  
Del Mar, Cal., 330 tons, State highway crossing over Santa Fe tracks, to Blue Diamond Corp., Ltd.  
Los Angeles County, 370 tons, State highway structures, to Soule Steel Co.  
Vernon, Cal., 300 tons, power house, to Truscon Steel Co.  
Hollywood, Cal., 120 tons, Kress store, to Soule Steel Co.

### NEW REINFORCING BAR PROJECTS

New York, 200 tons, section of West Side elevated highway.  
Hawthorne, N. J., 100 tons, high school.  
Philadelphia, 250 tons, Bell Telephone Co. building at Eighth and Cherry Streets; George A. Fuller Co., general contractor.  
Bucks County, Pa., 450 tons, bridges and roads for Pennsylvania State Highway Commission; Union Paying Co., general contractor.  
Butler County, Ohio, 275 tons, bridge.  
State of Ohio, 150 tons, nine small bridges.  
Buffalo, 300 tons, 166th Regiment Armory; John W. Cowper Co., Inc., contractor.  
Hamilton County, Ohio, 310 tons, road work.  
Michigan City, Ind., 115 tons, addition to penitentiary.  
Pasadena, Cal., 2000 tons, additional tonnage for Pine Canyon dam; previously reported 1500 tons.  
Los Angeles County, Cal., 275 tons, San Gabriel Dam No. 2; Los Angeles Iron & Steel Co., low bidder.  
Chandler, Ariz., 125 tons, Mesa-Casa Grande highway structures; bids close July 29.  
Los Angeles County, 648 tons, Castaic-Piru highway section; bids close Aug. 10.  
Santa Monica, Cal., 1237 tons, municipal breakwater; bids close Aug. 5.

## Cast Iron Pipe

Baltimore opened bids July 27 on 600 tons of 18 and 24 in. centrifugal for sewers.  
Washington district commissioners are inquiring for 200 tons of cast iron fittings.  
Hammonton, N. J., opens bids July 28 on 100 tons of 8-in.  
Freeport, N. Y., is taking bids until Aug. 1 on about 13 miles of 8-in. for sewers.  
Appleton, Wis., has purchased one carload of 6-in. Class C from Lynchburg Foundry Co., at \$3c. a ft.  
Seattle will require over 100 tons of 20-in. for the main Laurelhurst trunk sewer, for which specifications will soon be issued for bids.

# Copper Dull and Unchanged in Price; Tin and Zinc Steady; Lead Higher

NEW YORK, July 26.—The rising tide of sentiment that has buoyed up hopes for an early improvement in general business has not yet extended to the copper industry. A broad buying movement in copper apparently hinges not only upon a major upswing in industrial activity, but also upon liquidation of large stocks and completion of old contracts. Current offerings of electrolytic metal at 5.25c., delivered Connecticut, are being absorbed hesitantly and only when buying is imperative to cover imminent needs. Large mine producers are maintaining a nominal quotation of 5.37½c., delivered, with no sales reported at that figure. Severe competition in the European markets has forced the foreign price down to 4.50c., delivered usual Continental ports, a record low price for foreign delivery. Selling pressure by Japanese interests has been the dominant factor in influencing lower foreign prices. Copper Exporters, Inc., has offered small tonnages of foreign copper smelted in bond at 4.70c., c.i.f. usual Continental ports, a reduction of

17½ points from its previous special posting.

## Tin

Demand continues to be extremely dull. Although a slight flurry of interest in tin followed the recent firming of financial markets, current inquiry is not specific enough to reflect buying tendencies. Prices continue on an even keel, with today's New York price 20.80c. a lb. The London market today was £125 12s. 6d. a ton for spot standard, £127 5s. for future standard and £130 12s. 6d. for spot Straits. Today's Singapore market was £132. Shipments from the Straits up to and including July 23 aggregated 2983 tons. A shipment of 150 tons from Liverpool to the United States accounted largely for the reduction of 167 tons last week in United Kingdom warehouse stocks, which now stand at 33,022 tons.

## Lead

Inquiry for lead in the past few days has aroused this market from its

recent lethargy. The improved demand occasioned an increase in the St. Louis price to 2.55c., effective today. The New York price remains unchanged at 2.65c. July deliveries into consumption have been particularly encouraging and will probably show a relatively marked gain over June shipments, which were the lowest on record. With consumers covered for about 50 per cent of August requirements, several large buyers have intimated a willingness to consider September lead, but the leading producers are not disposed to sell for delivery beyond August.

## Zinc

Occasional carlot buying represents the only activity in this market. Prices are fairly steady at 2.87c., New York, and 2.50c., East St. Louis, for shipment through September. At these prices, the large smelters are exerting little pressure to move zinc, preferring to accumulate stocks in anticipation of improved future demand.

### The Week's Prices. Cents Per Pound for Early Delivery

	July 20	July 21	July 22	July 23	July 25	July 26
Lake copper, New York.....	5.37½	5.37½	5.37½	5.37½	5.37½	5.37½
Electrolytic copper, N. Y.*.....	5.00	5.00	5.00	5.00	5.00	5.00
Straits tin, spot, N. Y.....	21.00	20.75	20.80	20.80	20.62½	20.80
Zinc, East St. Louis.....	2.50	2.50	2.50	2.50	2.50	2.50
Zinc, New York.....	2.87	2.87	2.87	2.87	2.87	2.87
Lead, St. Louis.....	2.50	2.50	2.50	2.50	2.50	2.55
Lead, New York.....	2.65	2.65	2.65	2.65	2.65	2.65

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.  
Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.  
Antimony, 5.00c. a lb., New York.  
Brass ingots, 85-5-5-5, 5.75c. a lb., New York and Philadelphia.

### From New York, Warehouse

#### Delivered Prices, Base per Lb.

Tin, Straits pig.....	22.50c. to 23.50c.
Tin, bar.....	24.50c. to 26.50c.
Copper, Lake.....	7.50c. to 8.50c.
Copper, electrolytic.....	7.25c. to 8.25c.
Copper, casting.....	7.00c. to 8.00c.
*Copper sheets, hot-rolled.....	14.87½c.
*High brass sheets.....	12.00c.
*Seamless brass tubes.....	15.25c.
*Seamless copper tubes.....	14.37½c.
*Brass rods.....	9.75c.
Zinc, slabs.....	4.25c. to 4.75c.
Zinc sheets (No. 9), casks.....	9.25c. to 9.50c.
Lead, American pig.....	3.50c. to 4.00c.
Lead, bar.....	5.25c. to 6.25c.
Lead sheets.....	7.25c.
Antimony, Asiatic.....	8.00c. to 9.00c.
Alum., virgin, 99 per cent plus.....	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent.....	16.00c.
Solder, ½ and ⅓.....	14.75c. to 15.75c.
Babbitt metal, commercial grade.....	18.00c. to 28.00c.

\*These prices are also for delivery from Chicago and Cleveland warehouses.

### Metals from Cleveland Warehouse

#### Delivered Prices per Lb.

Tin, Straits pig.....	24.25c.
Tin, bar.....	26.25c.

Copper, Lake.....	6.50c.
Copper, electrolytic.....	6.50c.
Copper, casting.....	6.25c.
Zinc, slab.....	4.25c. to 4.50c.
Lead, American pig.....	3.25c. to 3.50c.
Lead, bar.....	6.50c.
Antimony, Asiatic.....	9.00c.
Babbitt metal, medium grade.....	14.50c.
Babbitt metal, high grade.....	27.25c.
Solder, ½ and ⅓.....	15.75c.

### Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	3.75c.	4.25c.
Copper, hvy. and wire	3.50c.	4.125c.
Copper, light and bottoms	2.75c.	3.25c.
Brass, heavy.....	1.625c.	2.125c.
Brass, light.....	1.25c.	1.75c.
Hvy. machine composition.....	2.625c.	3.25c.
No. 1 yel. brass turnings.....	1.875c.	2.25c.
No. 1 red brass or compos. turnings..	2.50c.	3.00c.
Lead, heavy.....	1.75c.	2.125c.
Zinc.....	1.00c.	1.25c.
Cast aluminum.....	2.50c.	4.00c.
Sheet aluminum.....	6.50c.	8.00c.

## Colonial Steel Co. Resumes Operations

The Colonial Steel Co., subsidiary of Vanadium Alloy Steel Co., Latrobe, Pa., which has been inactive since May 1, resumed operations on its 16- and 9-in. bar mills July 26 in order to replenish stocks of bars and high-speed carbon steel sheets and to fill contract orders for copper-clad material. The Vanadium alloy plant is operating at about 25 per cent of capacity, while the Anchor Drawn Steel Co., the cold drawn department of Vanadium Alloy, is operating at about 35 per cent.

## Railroad Equipment

United States Navy Department is taking bids on one 30-ton gas-electric locomotive for service at Sunnyvale, Cal.

Kansas City Southern is building 25 70-ton hopper bottom gondola cars in its own shops.

Oregon Electric Railway Co., a subsidiary of Northern Pacific, has applied for permission to build an eight-mile line from Forest Grove, Ore., to Stimson Lumber Co. plant site at Seghers.

South Manchuria Railway, S. Togawa, purchasing agent, Dairen, Manchuria, is inquiring for five locomotives.

Indianapolis Railways, Inc., Indianapolis, has ordered 40 electric street cars and trolley buses from J. G. Brill Co., Philadelphia.

City of Seattle, has awarded to Columbia Steel Co. 400 26 and 33-in. rolled steel street car wheels, at \$24.50 and \$36.75.



# Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

## BARs, PLATES, SHAPES

### Iron and Steel Bars

#### Soft Steel

	Base per Lb.
Pittsburgh mill	1.60c
Chicago	1.70c
Philadelphia	1.91c
New York	1.85c
Detroit	1.80c
Cleveland	1.65c
Lakawanna	1.70c
Birmingham	1.70c
Pacific ports	2.10c

#### Billet Steel Reinforcing

(as quoted by distributors)

P'gh mills, 40, 50, 60-ft.	1.60c
Birmingham, mill lengths	1.75c
Cleveland	1.60c to 1.75c

#### Rail Steel

mills, east of Chicago dist.	1.35c to 1.45c
Chicago Heights mills	1.50c

#### Iron

Common iron, f.o.b. Chicago	1.65c
Adm'd iron, f.o.b. P'gh mills	2.75c
Common iron, del'd Philadelphia	2.11c
Common iron, del'd New York	2.15c

### Tank Plates

	Base per Lb.
Pittsburgh mill	1.60c
Chicago	1.70c
Birmingham	1.75c
Cleveland	1.8035c
Philadelphia	1.7935c
Coatesville	1.70c
Sparrows Point	1.70c
New York	1.898c
Pacific ports	2.00c

### Structural Shapes

	Base per Lb.
Pittsburgh mill	1.60c
Chicago	1.70c
Birmingham	1.75c
Lakawanna	1.70c
Bethlehem	1.70c
Cleveland	1.8035c
Philadelphia	1.7485c
New York	1.8678c
Pacific ports	2.10c
Pacific ports (wide flange)	2.20c

### Steel Sheet Piling

	Base per Lb.
Pittsburgh	1.90c
Chicago mill	2.05c
Buffalo	2.00c

### Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.45c to 2.65c per Lb.	Alloy Differential per 100 Lb.
S.A.E. Series	
2000 (1% Nickel)	\$0.25
3000 (1 1/2% Nickel)	0.55
3500 (3 1/2% Nickel)	1.50
3500 (5% Nickel)	2.25
5100 Nickel Chromium	0.55
5100 Nickel Chromium	1.35
5100 Nickel Chromium	3.80
5400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.16 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel	0.20
4100 Chromium Vanadium Bar	1.20
4100 Chromium Vanadium Spring Steel	0.95
9250 Silicon Manganese Springs	0.25
Steel (Rods)	0.25
Rounds and Squares	0.50
Chromium Nickel Vanadium	1.50
Carbon Vanadium	0.95

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is 1/2c higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 1/2 in. thick, regardless of sectional area, take the bar price.

### Cold Finished Bars

	Base per Lb.
Bars, f.o.b. Pittsburgh mill	1.70c
Bars, f.o.b. Chicago	1.75c
Bars, Cleveland	1.75c
Bars, Buffalo	1.75c
Bars, Detroit	1.90c
Bars, eastern Michigan	1.95c
Shafting, ground, f.o.b. mill	1.85c
	12.05c to 3.00c

\*In quantities of 10,000 lb. or more.  
†According to size.

## SHEETS, STRIP, TIN PLATE, TERNE PLATE

### Sheets

#### Hot-rolled

	Base per Lb.
No. 10 f.o.b. Pittsburgh	1.55c
No. 10 f.o.b. Chicago mill	1.60c
No. 10 del'd Philadelphia	1.85c
No. 10 f.o.b. Birmingham	1.70c
No. 10 c.i.f. Pacific Coast ports	2.17 1/2c

#### Hot-rolled and Annealed

No. 10, Pittsburgh	1.70c
No. 10, Chicago mills	1.80c
No. 10, Birmingham	1.85c
No. 10, Pacific Coast ports	2.52 1/2c

#### Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.20c
No. 24, f.o.b. Chicago mill	2.30c
No. 24, del'd Philadelphia	2.46c to 2.51c
No. 24, f.o.b. Birmingham	2.35c
No. 24, c.i.f. Pacific Coast ports	2.85c

#### Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.25c
No. 10 gage, f.o.b. Chicago mill	2.35c
No. 10 gage, del'd Philadelphia	2.46c

#### Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.75c
No. 20 gage, f.o.b. Chicago mill	2.85c
No. 20 gage, del'd Philadelphia	3.06c

#### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	2.85c to 2.90c
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#### Steel Furniture Sheets

No. 10, f.o.b. Pittsburgh	2.65c
No. 20, f.o.b. Pittsburgh	3.15c

(Prices on furniture stock include stretcher leveling but not requiring.)

#### Galvanized Sheets

No. 24, f.o.b. Pittsburgh	2.85c
No. 24, f.o.b. Chicago mill	2.95c
No. 24, del'd Philadelphia	3.16c
No. 24, f.o.b. Birmingham	3.00c
No. 24, c.i.f. Pacific Coast ports	3.50c

#### Long Terns

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh	2.90c to 3.00c
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#### Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh	2.50c to 2.60c
No. 20, f.o.b. Pittsburgh	3.00c to 3.10c

#### Tin Mill Black Plate

No. 28 f.o.b. Pittsburgh	2.40c
No. 28 Chicago mill	2.50c

### Tin Plate

	Base per Box
Standard cokes, f.o.b. P'gh district mill	\$4.75
Standard cokes, f.o.b. Gary	4.85

### Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per Package, 20 x 23 in.)

8-lb. coating I.C.	\$9.50
15-lb. coating I.C.	12.00
20-lb. coating I.C.	13.00
25-lb. coating I.C.	14.10
30-lb. coating I.C.	14.90
40-lb. coating I.C.	16.70

### Hot-rolled Hoops, Bands and Strips

	Base per Lb.
All widths up to 24 in., Pittsburgh	1.45c to 1.50c
All widths up to 24 in., Chicago	1.55c to 1.60c
Cooperage stock, P'gh	1.55c to 1.60c
Cooperage stock, Chicago	1.65c to 1.70c

### Cold-Rolled Strips

F.o.b. Pittsburgh	2.00c
F.o.b. Cleveland	2.00c
Del'd Chicago	2.30c
F.o.b. Worcester	2.30c
Pender stock, No. 20 gage, Pittsburgh or Cleveland	2.90c

## WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)

(After Dec. 31, extras of 10c a 100 lb. on mixed and joint carloads, 25c on pool carloads and 40c on less than carloads will be applied on all merchant wire products.)

#### To Manufacturing Trade

Bright wire	2.20c
Spring wire	3.20c

#### To Jobbing Trade

	Base per Keg
Standard wire nails	\$1.95
Smooth coated nails	1.95
Galvanized nails	3.95

#### Base per Lb.

Smooth annealed wire	2.35c
Smooth galvanized wire	2.80c
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, galvanized	2.60c

Woven wire fence No. 9 gage, per net ton ..... \$55.00  
Woven wire fence, No. 12 1/2 gage and lighter, per net ton ..... 60.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

## STEEL PIPE AND TUBING

### Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

#### Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/2	47	21 1/2	1/2 and 3/4	49	24
3/4 to 1	53	27 1/2	3/4	55	27
1	58	33 1/2	1	60	30
1 1/4	63	39 1/2	1 and 1 1/4	65	33 1/2
1 1/2	68	45 1/2	1 1/4 and 1 1/2	71	39 1/2
1 3/4	73	51 1/2	1 1/2	76	45 1/2
2	78	57 1/2	1 3/4	81	51 1/2
2 1/4	83	63 1/2	2	86	57 1/2
2 1/2	88	69 1/2	2 1/4	91	63 1/2
2 3/4	93	75 1/2	2 1/2	96	69 1/2
3	98	81 1/2	2 3/4	101	75 1/2
3 1/4	103	87 1/2	3	106	81 1/2
3 1/2	108	93 1/2	3 1/4	111	87 1/2
3 3/4	113	99 1/2	3 1/2	116	93 1/2
4	118	105 1/2	3 3/4	121	99 1/2
4 1/4	123	111 1/2	4	126	105 1/2
4 1/2	128	117 1/2	4 1/4	131	111 1/2
4 3/4	133	123 1/2	4 1/2	136	117 1/2
5	138	129 1/2	4 3/4	141	123 1/2
5 1/4	143	135 1/2	5	146	129 1/2
5 1/2	148	141 1/2	5 1/4	151	135 1/2
5 3/4	153	147 1/2	5 1/2	156	141 1/2
6	158	153 1/2	5 3/4	161	147 1/2
6 1/4	163	159 1/2	6	166	153 1/2
6 1/2	168	165 1/2	6 1/4	171	159 1/2
6 3/4	173	171 1/2	6 1/2	176	165 1/2
7	178	177 1/2	6 3/4	181	171 1/2
7 1/4	183	183 1/2	7	186	177 1/2
7 1/2	188	189 1/2	7 1/4	191	183 1/2
7 3/4	193	195 1/2	7 1/2	196	189 1/2
8	198	201 1/2	7 3/4	201	195 1/2
8 1/4	203	207 1/2	8	206	201 1/2
8 1/2	208	213 1/2	8 1/4	211	207 1/2
8 3/4	213	219 1/2	8 1/2	216	213 1/2
9	218	225 1/2	8 3/4	221	219 1/2
9 1/4	223	231 1/2	9	226	225 1/2
9 1/2	228	237 1/2	9 1/4	231	231 1/2
9 3/4	233	243 1/2	9 1/2	236	237 1/2
10	238	249 1/2	9 3/4	241	243 1/2
10 1/4	243	255 1/2	10	246	249 1/2
10 1/2	248	261 1/2	10 1/4	251	255 1/2
10 3/4	253	267 1/2	10 1/2	256	261 1/2
11	258	273 1/2	10 3/4	261	267 1/2
11 1/4	263	279 1/2	11	266	273 1/2
11 1/2	268	285 1/2	11 1/4	271	279 1/2
11 3/4	273	291 1/2	11 1/2	276	285 1/2
12	278	297 1/2	11 3/4	281	291 1/2
12 1/4	283	303 1/2	12	286	297 1/2
12 1/2	288	309 1/2	12 1/4	291	303 1/2
12 3/4	293	315 1/2	12 1/2	296	309 1/2
13	298	321 1/2	12 3/4	301	315 1/2
13 1/4	303	327 1/2	13	306	321 1/2
13 1/2	308	333 1/2	13 1/4	311	327 1/2
13 3/4	313	339 1/2	13 1/2	316	333 1/2
14	318	345 1/2	13 3/4	321	339 1/2
14 1/4	323	351 1/2	14	326	345 1/2
14 1/2	328	357 1/2	14 1/4	331	351 1/2
14 3/4	333	363 1/2	14 1/2	336	357 1/2
15	338	369 1/2	14 3/4	341	363 1/2
15 1/4	343	375 1/2	15	346	369 1/2
15 1/2	348	381 1/2	15 1/4	351	375 1/2
15 3/4	353	387 1/2	15 1/2	356	381 1/2
16	358	393 1/2	15 3/4	361	387 1/2
16 1/4	363	399 1/2	16	366	393 1/2
16 1/2	368	405 1/2	16 1/4	371	399 1/2
16 3/4	373	411 1/2	16 1/2	376	405 1/2
17	378	417 1/2	16 3/4	381	411 1/2
17 1/4	383	423 1/2	17	386	417 1/2
17 1/2	388	429 1/2	17 1/4	391	423 1/2
17 3/4	393	435 1/2	17 1/2	396	429 1/2
18	398	441 1/2	17 3/4	401	435 1/2
18 1/4	403	447 1/2	18	406	441 1/2
18 1/2	408	453 1/2	18 1/4	411	447 1/2
18 3/4	413	459 1/2	18 1/2	416	453 1/2
19	418	465 1/2	18 3/4	421	459 1/2
19 1/4	423	471 1/2	19	426	465 1/2
19 1/2	428	477 1/2	19 1/4	431	471 1/2
19 3/4	433	483 1/2	19 1/2	436	477 1/2
20	438	489 1/2	19 3/4	441	483 1/2
20 1/4	443	495 1/2	20	446	489 1/2
20 1/2	448	501 1/2	20 1/4	451	495 1/2
20 3/4	453	507 1/2	20 1/2	456	501 1/2
21	458	513 1/2	20 3/4	461	507 1/2
21 1/4	463	519 1/2	21	466	513 1/2
21 1/2	468	525 1/2	21 1/4	471	519 1/2
21 3/4	473	531 1/2	21 1/2	476	525 1/2
22	478	537 1/2	21 3/4	481	531 1/2
22 1/4	483	543 1/2	22	486	537 1/2
22 1/2	488	549 1/2	22 1/4	491	543 1/2
22 3/4	493	555 1/2	22 1/2	496	549 1/2
23	498	561 1/2	22 3/4	501	555 1/2
23 1/4	503	567 1/2	23	506	561 1/2
23 1/2	508	573 1/2	23 1/4	511	567 1/2
23 3/4	513	579 1/2	23 1/2	516	573 1/2
24	518	585 1/2	23 3/4	521	579 1/2
24 1/4	523	591 1/2	24	526	585 1/2
24 1/2	528	597 1/2	24 1/4	531	591 1/2
24 3/4	533	603 1/2	24 1/2	536	597 1/2
25	538	609 1/2	24 3/4	541	603 1/2
25 1/4	543	615 1/2	25	546	609 1/2
25 1/2	548	621 1/2	25 1/4	551	615 1/2
25 3/4	553	627 1/2	25 1/2	556	621 1/2
26	558	633 1/2	25 3/4	561	627 1/2
26 1/4	563	639 1/2	26	566	633 1/2
26 1/2	568	645 1/2	26 1/4	571	639 1/2
26 3/4	573	651 1/2	26 1/2	576	645 1/2
27	578	657 1/2	26 3/4	581	651 1/2
27 1/4	583	663 1/2	27	586	657 1/2
27 1/2	588	669 1/2	27 1/4	591	663 1/2
27 3/4	593	675 1/2	27 1/2	596	669 1/2
28	598	681 1/2	27 3/4	601	675 1/2
28 1/4	603	687 1/2	28	606	681 1/2
28 1/2	608	693 1/2	28 1/4	611	687 1/2
28 3/4	613	699 1/2	28 1/2	616	693 1/2
29	618	705 1/2	28 3/4	621	699 1/2
29 1/4	623	711 1/2	29	626	705 1/2
29 1/2	628	717 1/2	29 1/4	631	711 1/2
29 3/4	633	723 1/2	29 1/2	636	717 1/2
30	638	729 1/2	29 3/4	641	723 1/2
30 1/4	643	735 1/2	30	646	729 1/2
30 1/2	648	741 1/2	30 1/4	651	735 1/2
30 3/4	653	747 1/2	30 1/2	656	741 1/2
31	658	753 1/2	30 3/4	661	747 1/2
31 1/4	663	759 1/2	31	666	753 1/2
31 1/2	668	765 1/2	31 1/4	671	759 1/2
31 3/4	673	771 1/2	31 1/2	676	765 1/2
32	678	777 1/2	31 3/4	681	771 1/2
32 1/4	683	783 1/2	32	686	777 1/2
32 1/2	688	789 1/2	32 1/4	691	783 1/2
32 3/4	693	795 1/2	32 1/2	696	789 1/2
33	698	801 1/2	32 3/4	701	795 1/2
33 1/4	703	807 1/2	33	706	801 1/2
33 1/2	708	813 1/2	33 1/4	711	807 1/2
33 3/4	713	819 1/2	33 1/2	716	813 1/2
34	718	825 1/2	33 3/4	721	819 1/2
34 1/4	723	831 1/2	34	726	825 1/2
34 1/2	728	837 1/2	34 1/4	731	831 1/2
34 3/4	733	843 1/2	34 1/2	736	837 1/2
35	738	849 1/2	34 3/4	741	843 1/2
35 1/4	743	855 1/2	35	746	849 1/2
35 1/2	748	861 1/2	35 1/4	751	855 1/2
35 3/4	753	867 1/2	35 1/2	756	861 1/2
36	758	873 1/2	35 3/4	761	867 1/2
36 1/4	763	879 1/2	36	766	873 1/2
36 1/2	768	885 1/2	36 1/4	771	879 1/2
36 3/4	773	891 1/2	36 1/2	776	885 1/2
37	778	897 1/2	36 3/4	781	891 1/2
37 1/4	783	903 1/2	37	786	897 1/2
37 1/2	788	909 1/2	37 1/4	791	903 1/2
37 3/4	793	915 1/2	37 1/2	796	909 1/2
38	798	921 1/2	37 3/4	801	915 1/2
38 1/4	803	927 1/2	38	806	921 1/2
38 1/2	808	933 1/2	38 1/4	811	927 1/2
38 3/4	813	939 1/2	38 1/2	816	933 1/2
39	818	945 1/2	38 3/4	821	939 1/2
39 1/4	823	951 1/2	39	826	945 1/2
39 1/2	828	957 1/2	39 1/4	831	951 1/2
39 3/4	833	963 1/2	39 1/2	836	957 1/2
40	838	969 1/2	39 3/4	841	963 1/2
40 1/4	843	975 1/2	40	846	969 1/2
40 1/2	848	981 1/2	40 1/4	851	975 1/2
40 3/4	853	987 1/2	40 1/2	856	981 1/2
41	858	993 1/2	40 3/4	861	987 1/2
41 1/4	863	999 1/2	41	866	993 1/2
41 1/2	868	1005 1/2	41 1/4	871	999 1/2
41 3/4	873	1011 1/2	41 1/2	876	1005 1/2
42	878	1017 1/2	41 3/4	881	1011 1/2
42 1/4	883	1023 1/2	42	886	1017 1/2
42 1/2	888	1029 1/2	42 1/4	891	1023 1/2
42 3/4	893	1035 1/2	42 1/2	896	1029 1/2
43	898	1041 1/2	42 3/4	901	1035 1/2
43 1/4	903	1047 1/2	43	906	1041 1/2
43 1/2	908	1053 1/2	43 1/4	911	1047 1/2
43 3/4	913	1059 1/2	43 1/2	916	1053 1/2
44	918	1065 1/2	43 3/4	921	1059 1/2
44 1/4	923	1071 1/2	44	926	1065 1/2
44 1/2	928	1077 1/2	44 1/4	931	1071 1/2
44 3/4	933	1083 1/2	44 1/2	936	1077 1/2
45	938	1089 1/2	44 3/4	941	1083 1/2
45 1/4	943	1095 1/2	45	946	1089 1/2
45 1/2	948	1101 1/2	45 1/4	951	1095 1/2
45 3/4	953	1107 1/2	45 1/2	956	1101 1/2
46	958	1113 1/2	45 3/4	961	1107 1/2
46 1/4	963	1119 1/2	46	966	1113 1/2
46 1/2	968	1125 1/2	46 1/4	971	1119 1/2
46 3/4	973	1131 1/2	46 1/2	976	1125 1/2
47	978	1137 1/2	46 3/4	981	1131 1/2
47 1/4	983	1143 1/2	47	986	1137 1/2
47 1/2	988	1149 1/2	47 1/4	991	1143 1/2
47 3/4	993	1155 1/2	47 1/2	996	1149 1/2
48	998	1161 1/2	47 3/4	1001	1155 1/2
48 1/4	1003	1167 1/2	48	1006	1161 1/2
48 1/2	1008	1173 1/2	48 1/4	1011	1167 1/2
48 3/4	1013	1179 1/			

(F.O.B. Pittsburgh or Youngstown)	
	Per Lb.
Grooved	1.60c.
Universal	1.60c.
Rheared	1.60c.

Wire Rods	
(Common soft, base)	
	Per Gross Ton
Pittsburgh	\$37.00
Cleveland	37.00
Chicago	38.00

## COKE, COAL AND FUEL OIL

Coke	
	Per Net Ton
Furnace, f.o.b. Connellsville	\$2.00 to \$2.15
Foundry, f.o.b. Connellsville	3.00 to 4.25
Foundry, by-product, Chicago	7.00
Foundry, by-product, delivered in Chicago switching district	7.75
Foundry, by-product, New England, delivered	10.00
Foundry, by-product, Newark or Jersey City, del'd	8.20 to 8.81
Foundry, by-product, Phila. land, delivered	8.00
Foundry, Birmingham	7.82
Foundry, by-products, St. Louis, f.o.b., even	5.00
Foundry, by-products, del'd St. Louis	8.00
Foundry, by-products, del'd St. Louis	9.00

Coal	
	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.50
Mine runaking coal, f.o.b. W. Pa. mines	1.50 to 1.60
Gas coal, 8 1/2-in., f.o.b. Pa. mines	1.70 to 1.80
Mine run gas coal, f.o.b. Pa. mines	1.50 to 1.60
Steam slack, f.o.b. W. Pa. mines	0.50 to 0.65
Gas slack, f.o.b. W. Pa. mines	0.50 to 0.65

Fuel Oil	
	Per Gal. f.o.b. Bayonne, N. J.
No. 3 distillate	1.00c.
No. 4 industrial	3.50c.
Per Gal. f.o.b. Baltimore	
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
Per Gal. del'd Chicago	
No. 3 industrial fuel oil	2.85c.
No. 5 industrial fuel oil	2.45c.
Per Gal. f.o.b. Cleveland	
No. 3 industrial fuel oil	4.02c.
No. 4 distillate	4.00c.

## REFRACTORIES

Fire Clay Brick	
	Per 1000 f.o.b. Works
High-heat intermediate	
Duty Brick	
Penn.	\$35.00 \$25.00 to \$30.00
Maryland	35.00 25.00 to 30.00
New Jer.	\$31.00 to 37.00 25.00 to 30.00
Ohio	35.00 25.00 to 30.00
Kentucky	35.00 25.00 to 30.00
Missouri	35.00 25.00 to 30.00
Illinois	35.00 25.00 to 30.00
Ground fire clay, per ton	6.50

Chrome Brick	
	Per Net Ton
Standard size	\$42.50

Silica Brick	
	Per 1000 f.o.b. Works
Pennsylvania	\$38.00
Chicago	37.40 to 41.40
Birmingham	33.50
Silica clay, per ton	8.00

Magnesia Brick	
	Per Net Ton
Standard size, burned, f.o.b. Baltimore and Chester, Pa.	\$61.50
Unburned, f.o.b. Baltimore and Chester, Pa.	\$2.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	38.50
Domestic, f.o.b. Chowch, Wash.	20.00

## CAST IRON PIPE

6-in. and larger, del'd	
	Per Net Ton
Chicago	\$34.40 to \$38.40
4-in., del'd Chicago	37.40 to 41.40
6-in. and larger, del'd New York	50.50
4-in., del'd New York	33.50
6-in. and larger, Birmingham	\$32.00 to 33.00
4-in., Birmingham	23.00 to 35.00
Class "A" and gas pipe, \$3 extra.	

## VALLEY

Per gross ton, f.o.b. Valley furnace:	
Basic	\$13.50
Bessemer	13.00
Gray forge	14.50
No. 2 foundry	14.50
No. 3 foundry	14.00
Malleable	\$14.50 to 15.00
Low phos., copper free	25.00

Freight rate to Pittsburgh or Cleveland district, \$1.82.

## PITTSBURGH

Per gross ton, f.o.b. Pittsburgh district furnace:	
Basic	\$14.00
No. 2 foundry	15.00
No. 3 foundry	13.50
Malleable	15.00
Bessemer	15.00

Freight rates to points in Pittsburgh district range from 69c. to \$1.26.

## CHICAGO

Per gross ton at Chicago furnace:	
N't'n No. 2 fdy.	\$15.50
N't'n No. 1 fdy.	16.00
Malleable, not over 2 1/2 in.	15.50
High phosphorus	15.50
Lake Super. charcoal, sil. 1.50, by rail	23.17
Southern No. 2 fdy.	16.14
Low phos., sil. 1 to 2, Copper free	21.50
Silvery, sil. 8 per cent.	23.87
Basic, ferrosil'n, 15 per cent.	28.92

Prices are delivered consumers' yards except on Northern foundry high phosphorus and malleable, which are f.o.b. local furnaces, not including a switching charge.

## ST. LOUIS

Per gross ton at St. Louis:	
No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	\$17.50
Malleable, f.o.b. Granite City	17.50
N't'n No. 2 fdy., del'd	\$18.50 to 18.80
Southern No. 2 fdy., del'd	14.50
N't'n malleable, del'd	18.30 to 18.80
N't'n basic, del'd	18.30 to 18.80

Freight rates \$2c. (average) Granite City to St. Louis; \$3.50 from Chicago; \$1.50 from Birmingham.

## NEW YORK

Per gross ton, delivered New York district:	
Bessemer No. 2, del'd east	
N. J.	\$17.41 to \$17.66
East Pa. No. 2 fdy.	15.02 to 15.52
East Pa. No. 2X fdy.	15.52 to 16.02

Freight rates: \$1.52 to \$2.63 from eastern Pennsylvania.

\*Prices delivered to New Jersey cities having rate of \$3.41 a ton from Buffalo.

## BUFFALO

Per gross ton, f.o.b. furnace:	
No. 2 fdy.	\$16.00
No. 2X fdy.	16.50
No. 1 fdy.	17.50
Malleable, sil. up to 2.25	16.50
Basic	15.00
Lake Superior charcoal, del'd	23.41

## NEW ENGLAND

Per gross ton delivered to most New England points:	
*Buffalo, sil. 1.75 to 2.25	\$19.04 to \$20.04
*Buffalo, sil. 2.25 to 2.75	19.04 to 20.04
*Buffalo, sil. 1.75 to 2.25	17.41 to 18.91
*Buffalo, sil. 2.25 to 2.75	17.41 to 18.91
*Ala., sil. 1.75 to 2.25	19.74
*Ala., sil. 2.25 to 2.75	20.21
*Ala., sil. 1.75 to 2.25	15.88
*Ala., sil. 2.25 to 2.75	16.28

Freight rates: \$5.05 all rail from Buffalo, and \$3.31 to \$3.91 rail and water from Buffalo when \$1 barge and \$2 to \$2.50 New England freight rate are obtainable; \$9.75 all rail from Alabama and \$5.88 rail and water from Alabama to New England seaboard.

\*All-rail rate.

\*Rail-and-water rate.

## CINCINNATI

Per gross ton, delivered Cincinnati:	
Ala. fdy., sil. 1.75 to 2.25	\$13.82
Ala. fdy., sil. 2.25 to 2.75	14.32
Tenn. fdy., sil. 1.75 to 2.25	13.82
N't'n No. 2 foundry	\$17.01 to 17.50
S't'n Ohio silvery, 8%	21.02

Freight rates, \$2.02 from Ironton and Jackson, Ohio; \$3.82 from Birmingham.

## PHILADELPHIA

Per gross ton at Philadelphia:	
East. Pa. No. 2	\$14.34 to \$14.84
East. Pa. No. 2X	14.84 to 15.34
East. Pa. No. 1X	15.34 to 15.84
Basic del'd east, Pa.	14.50 to 15.00
Malleable	17.50 to 18.00
Stand. low phos. (f.o.b. east. Pa. furnace)	20.50 to 21.50
Con. b'r'g low phos. (f.o.b. furnace)	20.50 to 21.50

# Pig Iron, Ores, Ferroalloys

Va. No. 2 plain	21.54 to 22.04
Va. No. 2X	22.04 to 22.54

Prices, except as specified otherwise, are del'd Philadelphia. Freight rates: \$4c. to \$1.79 from eastern Pennsylvania furnaces; \$4.67 from Virginia furnaces.

## CLEVELAND

Per gross ton at Cleveland furnace:	
N't'n No. 2 fdy. (local delivery)	\$15.50
S't'n fdy. sil. 1.75 to 2.25	16.14
Malleable (local delivery)	15.50
Ohio silvery, 8 per cent.	21.87
Stand. low phos., Valley	23.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 55c. average local switching charge; \$3.12 from Jackson, Ohio; \$6.14 from Birmingham.

## BIRMINGHAM

Per gross ton, f.o.b. Birmingham dist. furnace:	
No. 2 fdy., 1.75 to 2.25 sil.	\$11.00
No. 2 soft, 2.25 to 2.75 sil.	11.50
Basic	11.00

## CANADA

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$22.60
No. 2 fdy., sil. 1.75 to 2.25	22.10
Malleable	22.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$24.00
No. 2 fdy., sil. 1.75 to 2.25	23.50
Malleable	24.00
Basic	\$23.00 to \$23.50

## Ferromanganese

Per Gross Ton	
Domestic, 80%, seaboard	\$68.00
Foreign, 80%, Atlantic or Gulf port, duty paid	68.00

Prices for lots of one carload or more; extras applied on less than carload lots.

## Spiegeleisen

Per Gross Ton Furnace	
Domestic, 19 to 21%	\$25.00

## Electric Ferrosilicon

Per Gross Ton Delivered	
50% (carloads)	\$77.50
50% (less carloads)	85.00
75% (carloads)	126.00
75% (less carloads)	136.00
14% to 16% (f.o.b.) Welland, Ont., in carloads	21.00
14% to 16% (less carloads)	36.00

## Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace	
Per Gross Ton	Per Gross Ton
10%	\$20.50
11%	21.00
12%	21.50
13%	22.50
14%	23.50
15%	24.00
16%	25.00
17%	26.50

## Silvery Iron

F.o.b. Jackson County, Ohio, Furnace	
Per Gross Ton	Per Gross Ton
6%	\$18.00
7%	18.50
8%	18.75
9%	19.00
10%	19.50
11%	20.00
12%	20.50
13%	21.00
14%	21.50
15%	22.50

## Other Ferroalloys

Ferrotungsten, per lb. wo. del. carloads	\$1.08
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Ferrotungsten, less carloads	\$1.15 to 1.29
Ferromanganese, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	10.00c.
Ferromanganese, 2% carbon	17.00c. to 17.50c.
Ferromanganese, 1% carbon	19.00c. to 20.00c.
Ferromanganese, 0.10%	23.50c. to 25.00c.
Ferromanganese, 0.06%	25.50c. to 27.00c.
Ferrovandium, del., per lb. contained Va.	\$3.05 to \$3.30
Ferrocobaltitanium, 15 to 18%, per net ton, f.o.b. furnace in carloads	160.00
Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base	68.00
Ferromolybdenum, per lb. Mo., del.	95c.
Calcium molybdate, per lb. Mo., del.	80c.
Ferrophosphorus, electric, 24% f.o.b. Anniston, Ala., per gross ton	\$91.00
Silico spiegeleisen, per ton, f.o.b. furnace, car lots	42.50
Ton lots or less, per ton	47.50
Silico-manganese, gross ton, delivered:	
2.50% carbon grade	105.00
1% carbon grade	115.00
Spot prices	\$5 a ton higher

## Ores

Lake Superior Ores, Delivered Lower Lake Ports	
	Per Gross Ton
Old range Bessemer, 51.50% iron	\$1.80
Old range non-Bessemer, 51.50% iron	4.65
Measle Bessemer, 51.50% iron	4.65
Measle non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign ore, c.i.f. Philadelphia or Baltimore

Per Unit	
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c. to 8.50c.
Iron, low phos., Swedish, average 68 1/2% iron	9.00c.
Iron, basic or foundry, Swedish, average 65% iron	8.00c.
Iron, basic or foundry, Russian, aver. 63% iron (nom.)	9.00c.
Manganese, Caucasian, washed 52% iron	24.00c.
Manganese, African, Indian, 50% iron	23c. to 24c.
Manganese, Brazilian, 46 to 48%	21c. to 22c.
Per Gross Ton	
Tungsten, Chinese wolframite	\$10.75 to \$11.00
Tungsten, domestic scheelite	\$10.00 to 10.50
Chrome, 45%, Cr2O3, crude, c.i.f. Atlantic seaboard	18.00
Chrome, 48%, Cr2O3, c.i.f. Atlantic seaboard	20.00

## Fluorspar

Per Net Ton	
Domestic, washed gravel, 85-5, Kentucky and Illinois mines, freight allowed	\$17.31
No. 2 lump, 85-5, Kentucky and Illinois mines, freight allowed	19.31
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid, \$16.00 to Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines	20.00

# Iron and Steel Scrap

PITTSBURGH	
Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$8.00 to \$8.50
No. 2 heavy melting steel	6.50 to 7.00
No. 2 railroad wrought	8.00 to 8.50
Scrap rails	8.00 to 8.50
Rails 3 ft. and under	10.50 to 11.00
Sheet bar crops, ordinary	8.00 to 8.50
Compressed sheet steel	7.50 to 8.00
Hand bundled sheet steel	6.50 to 7.00
Big steel axle turnings	7.00 to 7.50
Machine shop turnings	5.00 to 5.50
Short shop steel turnings	5.00 to 5.50
Short mixed borings and turnings	4.50 to 5.00
Cast iron borings	4.50 to 5.00
Cast iron car wheels	8.00 to 8.50
Heavy breakable cast	8.00 to 8.50
No. 1 cast	9.00 to 10.00
Rail, knuckles and couplers	8.50 to 9.00
Rail, coil and leaf springs	8.50 to 9.00
Roller steel wheels	8.50 to 9.00
Low phos. boiler crops	10.50 to 11.00
Low phos. sheet bar crops	10.50 to 11.00
Low phos. plate scrap	9.00 to 9.50
Low phos. punchings	9.00 to 9.50
Steel car axles	10.00 to 10.50

CHICAGO	
Delivered Chicago district consumers:	
	Per Gross Ton
Heavy melting steel	\$5.00 to \$5.50
Shoveling steel	5.00 to 5.50

Progs. switches and guards	4.50 to 5.00
Hydraulic comp. sheets	3.00 to 3.50
Drop forge flabings	3.50 to 4.00
No. 1 busheling	3.00 to 3.50
Roller car wheels	6.50 to 7.00
Railroad tires	6.50 to 7.00
Railroad leaf springs	7.50 to 8.00
Axle turnings	4.00 to 4.50

No. 2 busheling.....	\$1.50 to \$2.00
Automotive tires, smooth.....	7.50 to 8.50
Auto and truck.....	1.25 to 1.75
No. 1 machinery cast.....	6.00 to 6.50
Auto automobile cast.....	6.25 to 6.75
No. 1 railroad cast.....	4.75 to 5.25
No. 1 agricultural cast.....	4.50 to 5.00
Stove plate.....	5.00 to 5.50
Stake bars.....	4.75 to 5.25
Stake shoes.....	5.75 to 6.25

\*Relaying rails, including angle bars, are quoted f.o.b. dealers' yards.

## PHILADELPHIA

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel.....	\$6.00 to \$6.50
No. 2 heavy melting steel.....	4.50 to 5.00
No. 1 railroad wrought.....	4.00 to 4.50
Bundled sheets.....	4.00 to 4.50
Hydraulic compressed, new.....	4.50 to 5.00
Hydraulic compressed, old.....	4.00 to 4.50
Machine shop turnings.....	3.00 to 3.50
Heavy axle turnings.....	5.50 to 6.00
Cast borings (nom.).....	3.00 to 3.50
Heavy breakable cast.....	7.50 to 8.00
Stove plate (steel works).....	6.00 to 6.50
No. 1 low phos. heavy.....	3.50 to 4.00
Knuckles and knuckles.....	6.50 to 7.00
Roller steel wheels.....	6.50 to 7.00
No. 1 blast furnace (nom.).....	3.00 to 3.50
Spent iron and steel pipe.....	5.50 to 6.00
Scraping.....	10.00 to 11.00
Steel axles.....	11.50 to 12.00
No. 1 forge fire.....	5.50 to 6.00
Cast iron car wheels.....	8.00 to 8.50
No. 1 cast.....	8.00 to 8.50
Cast borings (chem.).....	8.00 to 10.00
Steel rails for rolling.....	9.00 to 9.50

## CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel.....	\$6.25 to \$6.75
No. 2 heavy melting steel.....	5.50 to 6.00
Compressed steel.....	5.50 to 6.00
Large bundled sheet stamping.....	4.50 to 5.00
Drop forge flashings.....	5.00 to 5.50
Machine shop turnings.....	2.00 to 2.50
Short shoveling turnings.....	4.00 to 4.50
No. 1 busheling.....	5.00 to 5.50
Steel axle turnings.....	5.00 to 5.50
Low phos. billet crops.....	9.00 to 10.00
Cast iron borings.....	2.50 to 3.00
Steel borings and short turnings.....	3.00 to 3.50
No. 2 busheling.....	3.00 to 3.50
No. 1 cast.....	6.50 to 7.00
Railroad grate bars.....	5.00 to 5.50
Stove plate.....	5.00 to 5.50
Rails under 3 ft.....	8.50 to 9.00
Rails for rolling.....	8.50 to 9.00
Railroad malleable.....	2.25 to 2.50
Cast iron car wheels.....	7.00 to 7.50

## BUFFALO

Per gross ton, f.o.b. Buffalo consumers' yards:	
No. 1 heavy melting steel.....	\$6.50 to \$7.00
No. 2 heavy melting steel.....	5.00 to 5.50
Drop rails.....	8.75 to 9.25
No. 1 hydraulic iron sheet.....	5.00 to 5.50
No. 1 hydraulic comp. sheet.....	1.00 to 1.50
Drop forge flashings.....	5.00 to 5.50
No. 1 busheling.....	5.00 to 5.50
Steel axle turnings.....	5.00 to 5.50
Machine shop turnings.....	4.00 to 4.50
Knuckles and knuckles.....	10.00 to 10.50
Cast and leaf corners.....	10.00 to 10.50
Roller steel wheels.....	10.00 to 10.50
Spent iron and steel pipe.....	10.00 to 10.50
Scraping.....	10.00 to 10.50
Short mixed borings and turnings.....	3.75 to 4.25
Cast iron borings.....	3.75 to 4.25
No. 2 busheling.....	3.50 to 4.00
Low phos. axle.....	10.00 to 11.00
No. 1 machinery cast.....	9.00 to 9.50
No. 1 cupola cast.....	8.75 to 9.25
Stove plate.....	7.25 to 7.75
Steel rails, 3 ft. and under.....	8.75 to 9.25
Cast iron car wheels.....	8.75 to 9.25
Industrial malleable.....	7.00 to 7.50
Railroad malleable.....	7.00 to 7.50
Chemical borings.....	7.50 to 8.00

## BIRMINGHAM

Per gross ton delivered consumers' yards:	
Heavy melting steel.....	\$7.00 to \$7.50
Drop steel rails.....	7.50 to 8.00
Short shoveling turnings.....	4.00 to 4.50
Stove plate.....	6.00 to 6.50
Stove plate.....	7.00 to 7.50
Low axle.....	7.00 to 7.50
No. 1 railroad wrought.....	3.50 to 4.00
Rails for rolling.....	8.00 to 8.50
No. 1 cast.....	7.50 to 8.00
Stove wheels.....	8.00 to 8.50
Cast iron borings, chem.....	8.50 to 9.00

## ST. LOUIS

Per gross ton delivered consumers' yards:	
Heavy melting steel.....	\$7.50 to \$8.00
No. 1 heavy melting steel.....	4.25 to 4.75
No. 2 heavy melting steel.....	4.50 to 5.00
No. 1 locomotive tires.....	4.75 to 5.25
Wide stand-ee rails.....	7.50 to 8.00
Railroad springs.....	6.50 to 7.00
Bundled sheets.....	2.75 to 3.25
No. 2 railroad wrought.....	4.25 to 4.75
No. 1 busheling.....	7.00 to 7.50
Cast iron borings and shoveling turnings.....	3.75 to 4.25
Iron rails.....	7.00 to 7.50
Rails for rolling.....	6.00 to 6.50
Machine shop turnings.....	2.00 to 2.50
Heavy turnings.....	2.75 to 3.25
Steel car axles.....	8.25 to 8.75
Iron car axles.....	11.75 to 12.25
Cast iron bars and trans.....	5.00 to 5.50
No. 1 railroad wrought.....	3.50 to 4.00
Steel rails less than 3 ft.....	8.50 to 9.00
Steel angle bars.....	6.00 to 6.50

Cast iron car wheels.....	4.50 to 5.00
No. 1 machinery cast.....	6.50 to 7.00
Railroad malleable.....	4.00 to 4.50
No. 1 railroad cast.....	5.75 to 6.25
Stove plate.....	5.50 to 6.00
Relay rails, 60 lb. and under.....	16.00 to 16.50
Relay rails, 60 lb. and over.....	20.00 to 21.00
Agricult. malleable.....	5.00 to 5.50

## NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel.....	\$2.50 to \$3.00
Heavy melting steel.....	1.50 to 2.00
No. 1 heavy breakable cast.....	4.50 to 5.00
Stove plate (steel works).....	2.25 to 2.75
Machine shop turnings.....	0.50 to 1.00
Short shoveling turnings.....	0.50 to 1.00
Cast borings and screw stock.....	0.50 to 1.00
No. 1 blast furnace.....	0.50 to 1.00
Steel car axles.....	8.00 to 8.50
Spec. iron and steel pipe.....	2.00 to 2.50
Forge fire.....	3.00 to 3.50
No. 1 railroad wrought.....	4.00 to 4.50
No. 1 yard wrought, long.....	3.25 to 3.75
Rails for rolling.....	3.00 to 3.50
No. 1 cast.....	5.00 to 5.50
No. 2 cast.....	4.00 to 4.50
Stove plate (foundry).....	3.25 to 3.75
Malleable cast (railroad).....	3.50 to 4.00
Cast borings (chemical).....	6.00 to 6.50

Per gross ton delivered local foundries:

No. 1 machinery cast.....	\$7.00 to \$7.50
No. 1 low, cast (cupola).....	1.00 to 1.50
No. 2 cast.....	4.00 to 4.50

## PITTSBURGH

Base per lb.	
Plates.....	2.85c
Structural shapes.....	2.85c
Soft steel bars and small shapes.....	2.60c
Reinforcing steel bars.....	2.60c
Cold-finished and screw stock.....	2.60c
Rounds and hexagons.....	2.95c
Squares and flats.....	3.35c
Bands.....	2.95c
Hoops.....	3.60c
Hot-rolled annealed sheets (No. 24).....	3.15c
25 or more bundles.....	3.15c
Galv. sheets (No. 24).....	3.65c
Hot-rolled sheets (No. 10).....	3.10c
Galv. corrug. sheets (No. 24).....	3.10c
Squares (less than 37.50 lb.).....	\$2.74
Spikes, large.....	\$2.96 to \$3.00
Small.....	\$2.96 to \$3.00
Boat.....	3.00c
Track bolts, all sizes, per 100 count.....	70 per cent off list
Machine bolts, 100 count.....	70 per cent off list
Carriage bolts, 100 count.....	70 per cent off list
Nuts, all styles, 100 count.....	70 per cent off list
Large rivets, base per 100 lb.....	\$3.00
Wire, black, soft, ann'd, base per 100 lb.....	2.75
Wire, galv. soft, base per 100 lb.....	3.20
Common wire nails, per keg.....	2.25
Cement coated nails, per keg.....	2.25

On plates, structural, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

## CHICAGO

Base per lb.	
Plates and structural shapes.....	3.00c
Soft steel bars, small shapes.....	2.75c
Reinforcing bars, small shapes.....	2.75c
Rail steel reinforcement.....	1.35c
Cold-finished steel bars and shafting.....	3.00c
Rounds and hexagons.....	3.00c
Plates and squares.....	3.50c
Bands.....	2.95c
12 gages.....	2.95c
Hoops (No. 14 gauge and lighter).....	3.50c
Hot-rolled annealed sheets (No. 24).....	3.10c
Galv. sheets (No. 24).....	3.10c
Hot-rolled sheets (No. 10).....	2.95c
Spikes (3/4 in. and lighter).....	2.45c
Track bolts.....	4.30c
Rivets, structural.....	3.75c
Rivets, boiler.....	3.75c

Per Cent Off List

Machine bolts.....	70
Carriage bolts.....	70
Cone and lag screws.....	70
Hot-pressed nuts, sq. tap, or blank.....	70
Hot-pressed nuts, hex. tap, or blank.....	70
Hex. head cap screws.....	80
Cup-point set screws.....	70 and 10
Flat head bright wood screws.....	80
Spring rollers.....	60
Stove bolts.....	80
Rd. bl. tank rivets, 7/16 in. and smaller.....	65
Wrought washers.....	\$1.50 per 100
No. 8 black ann'd wire, per 100 lb.....	\$2.45
Com. wire nails, base per keg.....	2.20
Cement c'd nails, base per keg.....	2.20

## NEW YORK

Base per lb.	
Plates and struc. shapes.....	2.75c to 3.10c
Soft steel bars, small shapes.....	2.70c to 3.10c
Iron bars.....	3.24c
Iron bars, Swed. charcoal.....	6.00c to 6.50c
Cold-finished sheet and screw stock.....	3.75c
Rounds and hexagons.....	3.00c
Plates and squares.....	3.80c
Cold-rolled strip, soft and quarter hard.....	4.95c
Hoops.....	3.30c
Tank sheets (No. 24).....	3.25c
Hot-rolled sheets (No. 10).....	3.25c
Hot-rolled sheets (No. 24).....	3.50c
Galvanized sheets (No. 24).....	4.00c
Long term sheets (No. 24).....	4.50c
Standard tool steel.....	12.00c
Wire, black annealed (No. 10).....	3.60c
Wire, galv. annealed (No. 10).....	4.05c

## BOSTON

Dealers' buying prices per gross ton:

No. 1 heavy melting steel.....	\$3.35 to \$3.50
Scrap T. rails.....	2.00 to 2.50
Machine shop turnings.....	0.80 to 1.00
Cast iron borings.....	1.00 to 1.50
Bundled skeleton, long.....	2.00 to 2.10
Forge flashings.....	2.00 to 2.50
Blast furnace scrap.....	0.90 to 1.00
Forge scrap.....	2.00 to 2.25
Shafting.....	7.50 to 10.00
Steel car axles.....	9.00 to 9.50
Wrought pipe.....	4.00 to 4.25
Rails for rolling.....	4.50 to 5.00
Cast iron borings, chemical.....	7.00 to 7.25

Per gross ton delivered consumers' yards:

Textile cast.....	\$7.00 to \$7.50
No. 1 machinery cast.....	7.50 to 8.00
Stove plate.....	5.00 to 5.25
Railroad malleable.....	10.50 to 11.00

## CINCINNATI

Dealers' buying prices per gross ton:

Heavy melting steel.....	\$3.50 to \$5.00
Scrap rails for melting.....	5.00 to 5.50
Scrap sheet piling.....	1.00 to 1.50
Bundled sheets.....	2.25 to 2.75
Cast iron borings.....	2.75 to 3.25
Machine shop turnings.....	2.50 to 3.00
No. 2 busheling.....	3.75 to 4.25
No. 1 busheling.....	2.00 to 2.50
Rails for rolling.....	6.00 to 6.50
No. 1 locomotive tires.....	7.00 to 7.50
Short rails.....	8.00 to 8.50
Cast iron car wheels.....	6.00 to 6.50
No. 1 machinery cast.....	7.50 to 8.00
No. 1 railroad cast.....	7.00 to 7.50

\*No. 28 and heavier, 35 in. wide, 20c higher per 100 lb.

## ST. LOUIS

Base per lb.	
Plates and struc. shapes.....	3.25c
Bars, soft steel or iron.....	3.00c
Cold-fn. rounds, shafting, screw stock.....	3.31c
Hot-rolled annealed sheets (No. 24).....	3.80c
Galv. sheets (No. 24).....	4.35c
Hot-rolled sheets (No. 10).....	3.45c
Black corrug. sheets (No. 24).....	3.85c
Galv. corrug. sheets.....	4.10c
Structural rivets.....	4.00c
Boiler rivets.....	4.00c

Per Cent Off List

Tank rivets, 1/2 in. and smaller, 100 lb. or more.....	65
Less than 100 lb.....	60
Machine bolts.....	70
Carriage bolts.....	70
Lag screws.....	70
Hot-pressed nuts, sq. tap, or blank.....	70
Hot-pressed nuts, hex. tap, or blank.....	70
Less than 200 lb. or more.....	60

## PHILADELPHIA

Base per lb.	
*Plates, 1/2 in. and heavier.....	2.10c
*Structural shapes.....	2.10c
*Soft steel bars, small shapes, iron bars (except bands).....	2.10c
Reinforcing steel bars, sq. twisted and deformed.....	2.30c
Cold-fn. steel, rounds and hex.....	3.35c
Cold-fn. flat, sq. and flats.....	3.85c
*Steel hoops, No. 12 to 24 in.....	2.65c
Steel bands, No. 12 to 24 in.....	2.40c
Spring steel.....	0.00c
Hot-rolled annealed sheets (No. 24).....	3.55c
Galvanized sheets (No. 24).....	3.75c
*Hot-rolled and annealed sheets (No. 10).....	0.55c
Diam. pat. floor plates, 1/2 in.....	5.00c
Swedish iron bars.....	6.00c

\*These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

\*Base prices for 15,000-lb. orders; extra apply for smaller quantities.

## CLEVELAND

Base per lb.	
Plates and struc. shapes.....	2.95c
Soft steel bars.....	2.75c
Reinforcing steel bars.....	1.75c to 1.95c
Cold-fn. rounds and hex.....	3.90c
Cold-fn. flat and sq.....	4.00c
Flat rolled steel under 1/2 in.....	5.50c
Hot-rolled annealed sheets (No. 24).....	3.25c
Galvanized sheets (No. 24).....	3.75c
Hot-rolled sheets (No. 10).....	3.00c
Black ann'd wire, per 100 lb.....	\$2.25
No. 8 wire, per 100 lb.....	3.20
Com. wire nails, base per keg.....	2.25

\*Not base. Including boring and boring to length.

## CINCINNATI

Base per lb.	
Plates and struc. shapes.....	3.25c
Bars, soft steel or iron.....	3.00c
New billet reinforcing bars.....	3.00c

Burnt cast.....	3.25 to 3.75
Stove plate.....	3.25 to 3.75
Agricultural malleable.....	4.50 to 5.00
Railroad malleable.....	7.00 to 7.50

## DETROIT

Dealers' buying prices per gross ton:

Heavy melting steel.....	\$1.25 to \$1.75
Borings and short turn.....	1.50 to 2.00
Long turnings.....	1.50 to 2.00
No. 1 machinery cast.....	7.00 to 7.50
Automotive cast.....	8.50 to 9.00
Hydraulic pump sheets.....	3.25 to 3.75
Stove plate.....	3.25 to 3.75
New No. 1 busheling.....	2.25 to 2.75
Old No. 2 busheling.....	1.25 to 1.75
Sheet clippings.....	1.25 to 1.75
Flashings.....	2.50 to 3.00

## CANADA

Dealers' buying prices per gross ton:

	Toronto	Montreal
Heavy melting steel	\$7.00	\$6.00
Rails, scrap	7.00	6.00
No. 1 wrought	6.00	5.00
Machine shop turnings	5.00	4.00
Boiler plate	5.00	4.50
Heavy axle turnings	2.50	2.50
Cast borings	2.00	2.00
Steel borings	2.00	2.00
Wrought pipe	2.00	2.00
Steel axles	2.00	2.00
Axles, wrought iron	7.00	6.00
No. 1 machinery cast	12.50	10.00
Stove plate	10.00	8.00
Standard railroads	10.00	8.50
Malleable	10.00	8.00



# PLANT EXPANSION AND EQUIPMENT BUYING

## Machine Tool Inquiries Slightly Improved

Actual Buying Still at Low Ebb  
But Users Manifest More Interest in New Equipment

**M**ACHINE tool inquiry has shown some scattered evidences of improvement, but buying continues to drag. At Chicago, potential purchasers are again visiting show rooms and some used machinery is being bought. At Pittsburgh there has been a considerable gain in inquiries for estimating purposes. However, practically no new

tools are being purchased and even repair parts have ceased to move. In some instances companies having similar machines are stripping idle equipment to obtain parts for equipment that is still in service. Obviously any revival in industrial activity would mean a sharp increase in repair parts demand, not to mention orders for new machines.

Machine tool makers, however, are gaining courage and in many cases are building new lines as well as improving old ones.

Inquiry for sheet-metal forming machinery has picked up in the past week or two, and the Government has placed a few orders for machinery for dams and other river improvement work.

### ◀ NORTH ATLANTIC ▶

**Commanding Officer, Watervliet Arsenal, Watervliet, N. Y.**, asks bids until Aug. 1 for drop forgings, including 100 lifting eyes and 100 extractors (Circular 1); until Aug. 2 for naval brass (Circular 2).

**Fuel Oil Motors Corp.**, 120 Broadway, New York, has concluded license agreement with Kermath Mfg. Co., 5890 Commonwealth Avenue, Detroit, manufacturer of marine motors, for production and use of Schwarz cycle equipment, controlled by first noted company, designed to adapt ordinary gasoline engines to utilize fuel oil. Kermath company will arrange manufacturing facilities for new line.

**Department of Sanitation, Municipal Building, New York**, asks bids until Aug. 10 for erection of three incinerator plants, one on 216th Street, Manhattan; one on Zerega Avenue, Bronx, and one at Douglaston, Queens. Units will include power stations, conveying, unloading and other mechanical equipment. Cost about \$962,000 each. A fourth incinerator will be built later.

**Commissioner, Department of Mental Hygiene, State Office Building, Albany, N. Y.**, asks bids until Aug. 3 for electric interlock equipment for Pilegrim State Hospital, Pine Aire Station, Suffolk County.

**Consolidated Oil Corp.**, 45 Nassau Street, New York, is negotiating for purchase of Rio Grande Oil Co., Los Angeles, and will operate as a subsidiary for Pacific Coast trade, expanding present production, pipe line, refinery, storage and distributing facilities. Rio Grande company has large refinery at Vinvale, Cal., and smaller plants at Phoenix, Ariz., and Ey Paso, Tex.; ocean terminal at Long Beach, Cal., and marine loading terminal at Elwood, Cal., also group of bulk oil storage and distributing plants in other parts of State, Arizona, Texas and New Mexico.

**Commissioner, Department of Correction, State Office Building, Albany, N. Y.**, asks bids until Aug. 4 for machine shop at Matteawan State Hospital, Beacon, N. Y., in connection with other construction.

**Sterling Shipyards, Inc.**, Greenport, N. Y., has been organized by Henry R. Talmage and Hubert P. Corwin, Riverhead, N. Y., and Percy G. Tuthill, Greenport, to operate a shipbuilding and repair plant.

**Shell Oil Co. of Canada, Ltd.**, Toronto, affiliated with Shell Union Oil Corp., New York, has approved plans for erection of new oil refinery in eastern part of Montreal, where site on St. Lawrence River was recently acquired. In addition to refineries for gasoline, motor and industrial oil production, project will include dock, with equipment for unloading crude oil tankers, storage and distributing plant and network of pipe lines from river front to refining plant. Cost about \$1,500,000 with equipment.

**Village Council, Fairport, N. Y.**, has secured permission to build a municipal power

plant and distributing system. Estimates of cost are being made.

**D. Schmerer, Inc.**, Richmond Hill, L. I., has been organized to take over and expand sheet metal and tinsmithing works of David Schmerer, 12630 Jamaica Avenue, New organization will manufacture roofing and other sheet metal goods.

**Heyer Products Co., Inc.**, 197 Grove Street, Bloomfield, N. J., manufacturer of automobile battery charging and testing equipment, has leased factory at 730 Washington Avenue, Belleville, N. J., with 30,000 sq. ft. floor space for new plant. Additional equipment for increased facilities will be installed.

**Greco & Julian, Inc.**, Wildwood, N. J., care of Robert Bright, Wildwood, has been organized by John Greco, Wildwood, and associates, capital \$125,000, to manufacture metal products.

**Board of Education, Hawthorne, N. J.**, plans manual training department in new three-story high school. Cost about \$500,000. Bids will be asked soon on general contract. Fanning & Shaw, 49 Ward Street, Paterson, N. J., are architects.

**White Mfg. Co.**, Lafayette and Liberty Streets, Newark, manufacturer of heaters and kindred equipment, is running on good production schedule and will devote portion of output to hot water tank heater for domestic use, recently placed on market.

**Tippett & Wood**, Taylor and Wilson Streets, Phillipsburg, N. J., manufacturer of boilers, tanks and other plate products, are advancing production schedule and number of workers will be reinstated.

**Bureau of Supplies and Accounts, Navy Department, Washington**, asks bids until Aug. 2 for 15 brass drums and 22 tenor drums (Schedule 8436), ventilating fans (Schedule 8443) for Philadelphia Navy Yard.

**Reading Co.**, Reading Terminal, Philadelphia, has plans for new power substation at Chestnut Hill, in connection with railroad electrification program. Cost over \$50,000 with equipment.

**Franklin Lamp Mfg. Co., Inc.**, 1524 North Hancock Street, Philadelphia, has leased floor in building at Amber and Willard Streets, 16,000 sq. ft., for new factory.

**Superior Auto Radiator Corp.**, Philadelphia, has been organized by Philip Schneider, 506 South Forty-first Street, Philadelphia, and Marcus Shotz, Twenty-second Street and Malvern Avenue, Chester, Pa., to manufacture automobile radiators, etc.

**York Ice Machinery Corp.**, York, Pa., is advancing production schedule, following receipt of recent contracts for ice-making machinery and air-conditioning equipment totaling about \$370,000.

**Harrisburg Pipe & Pipe Bending Co.**, Harrisburg, Pa., has purchased business, equipment and other assets of W. P. Paul Co., Drexel

Building, Philadelphia, manufacturer of flanges for oil pipe lines, etc., and other forgings. Purchasing company will expand facilities of its oil well supply division, rounding out line of equipment for such service.

**John A. Roebling's Sons Co.**, Roebling, Trenton, N. J., manufacturer of wire, cable, cableways, etc., is increasing production schedule and has reinstated a number of employees.

**Wrought Iron Co. of America, Inc.**, with plants at Lebanon, Scranton and Duncannon, Pa., in receivership, has been sold to Charles Lineaweaver, chairman of bondholders' committee, for consideration of \$35,000, \$10,000 and \$13,000, in order of plants noted. Plans are under consideration for reorganization. Operations will be continued.

**American District Steam Co.**, North Tonawanda, N. Y., manufacturer of heating equipment will resume operations at once on normal schedule, following receipt of Government contract for steam-heating pipe line system between Federal buildings at Washington, totaling \$1,250,000. Order is expected to require close to year for completion. Employment will be given 250 men.

**United States Forging & Machine Co.**, Endicott, N. Y., has been organized by John F. Thomas and Francis C. Wickes, 65 Broad Street, Rochester, N. Y., to manufacture machine products, forgings and other iron and steel specialties.

**New York Central Electric Corp.**, 89 East Street, Rochester, N. Y., plans erection of electric power plant and distributing system in Wyoming County, near Silver Springs, N. Y.

### ◀ SOUTH CENTRAL ▶

**City Council, Poplarville, Miss.**, has plans for municipal electric light and power house, and electric-operated pumping plant for water supply system. Cost about \$100,000 with machinery. Vinson B. Smith, Jr., Gulfport, Miss., is architect and engineer.

**Board of Education, Sylacauga, Ala.**, is considering manual training shop in new one-story and basement junior high and grade school, 125 x 250 ft., for which superstructure will soon begin. Charles H. McCauley, Jackson Building, Birmingham, is architect.

**Lexington Utilities Co.**, Lexington, Ky., will rebuild part of power plant recently destroyed by fire. Loss about \$50,000 with equipment.

**Birmingham Gas Co.**, North Twentieth Street, Birmingham, is negotiating for purchase of property of Industrial Gas Corp., operating at Montgomery, Ala., and vicinity, and will consolidate. Purchasing company plans expansion, including pipe lines.

**East Jefferson Water Works, District No. 1, Kenner, La.**, plans installation of an electric-operated power plant in connection with water and irrigation project, for which bonds for

## VARIETY IN UNIFORMITY

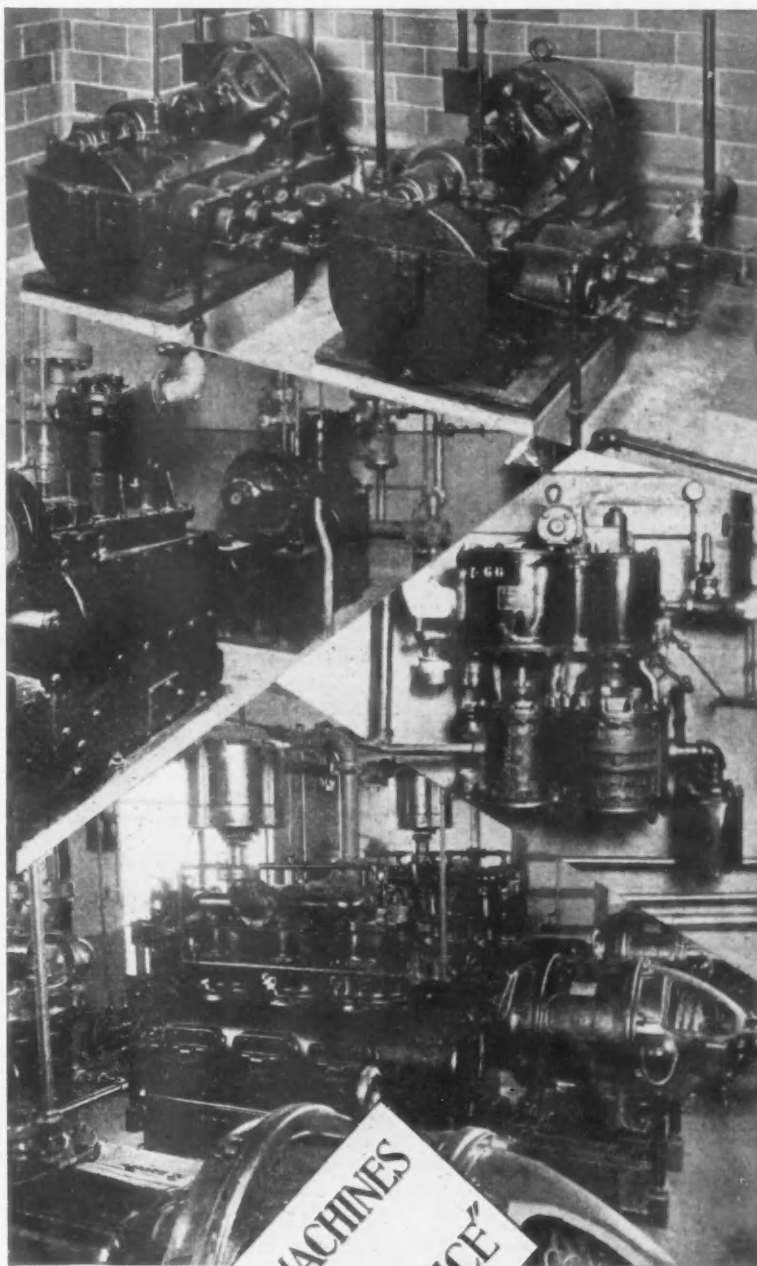
Westinghouse Air Compressors are available in many types and sizes—ranging from  $2\frac{1}{2}$  to 300 cu. ft. displacement—for every conceivable pneumatic requirement in any industrial plant . . . While there is diversity in form and purpose there is uniformity in quality and performance . . . These compressors possess unique design features and are well built. They are noted for reliable, economical operation, and for unusually long life.

WESTINGHOUSE  
TRACTION BRAKE CO.

*Industrial Division*

PITTSBURGH

PENNA.



# WESTINGHOUSE AIR COMPRESSORS

\$500,000 were recently approved. It is expected to ask bids late in August. Henry A. Mentz & Co., Inc., Citizens' Bank Building, Hammond, La., is consulting engineer.

R. Lee Parker, Washington Road, Natchez, Miss., will rebuild part of meat-packing plant recently destroyed by fire, including boiler plant and other units. Cost about \$25,000.

Concrete Steel Co., Birmingham, will start work this week on rebuilding fabricating plant recently destroyed by fire.

## ◀ NEW ENGLAND ▶

Acme Tool & Gauge Co., Inc., Pawtucket, R. I., organized by James F. Pullan and Thomas K. Fisher, Pawtucket, has leased one-story plant at 121 Bacon Street for manufacture of new type of electric refrigerator, oil burners and special tools. Initial production will be about 450 refrigerators and 250 oil burners a week. Mr. Pullan is president.

Warren Telechron Co., Ashland, Mass., manufacturer of electric clocks, is holding to good production schedule in different departments. Company has just secured contract for 2650 synchronous electric clock units for three Government buildings at Washington.

Whirlidry Corp., New Haven, Conn., has been organized by R. C. Swanton and E. W. Taft, New Haven, capital \$200,000, to manufacture mechanical drying machinery and parts.

Goodyear Tire & Rubber Co., Akron, Ohio, will reopen plant at Middletown, Conn., Aug. 1, following shutdown of several weeks, giving employment to about 150 workers.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 9 for one blue-printing machine (Schedule 8433) for Boston Navy Yard.

Bridgeport Dredge & Dock Co., Main Street, Bridgeport, Conn., is planning extensions and improvements at shipyard, including new equipment for repairs and reconditioning of large marine craft. Work will include construction of two marine railways. Cost over \$40,000 with equipment.

General Electric Co., Pittsfield, Mass., has adopted production schedule for 2000 oil-burning furnaces of new type and is advancing output in different departments with increased working quotas.

M. N. Cartier & Sons Co., 275 Canal Street, Providence, R. I., manufacturer of asphalt shingles, desires bids on machinery and tank equipment.

## ◀ MIDDLE WEST ▶

Gas Electric Corp., Chicago, recently organized, has acquired plant and assets of Thorne Motor Co., 6147 West Sixty-fifth Street, Clearing, Chicago, manufacturer of light delivery trucks, parts, etc., and will succeed to that organization. New company will carry out expansion. George Walton, formerly identified with Thorne company, is president of new organization.

Graham-Harris Co., Inc., has been organized by William L. Harris and Kenneth K. Graham to take over and expand company of same name at 6731 Sheridan Road, manufacturer of automotive appliances and devices and other mechanical equipment.

Twin City Iron & Wire Co., 21-35 West Water Street, Minneapolis, Minn., has received low bid from L. A. Goehring, Jim Falls, Wis., for rebuilding part of two-story plant recently destroyed by fire, and will soon begin work. Cost about \$50,000 with equipment.

City Council, Morris, Minn., is arranging special election to approve bond issue of about \$150,000 for erection of a municipal electric light and power plant. Robert J. Torrens, Shubert Building, St. Paul, Minn., is consulting engineer.

Paul Martin, Hot Springs, S. D., is at head of project to build a new oil refinery at Rapid City, S. D. Initial plant will have capacity for handling about 300 bbl. of crude oil a day, to be secured from Wyoming oil fields, and will cost over \$100,000 with machinery. Hugh Updike, Osage, Wyo., is interested in project.

State Highway Commission, Capitol Building, Cheyenne, Wyo., has asked bids on general contract for one-story repair shop, storage and equipment building, 40 x 100 ft., at Wheatland, Wyo., for highway machinery.

Department of Interior, United States Indian Warehouse, 1749 West Pershing Road, Chicago, asks bids until Aug. 2 for six steam-jacketed kettles.

Shanklin Mfg. Co., Springfield, Ill., has been organized by Robert A. Russian and T. R. Meredith to take over and expand company of

same name at 2725 South Eleventh Street, manufacturer of miners' lamps and appliances, sheet metal stampings and kindred equipment.

Phillips Petroleum Co., Bartlesville, Okla., has plans for a bulk oil storage and distributing plant at Winona, Minn. Cost about \$40,000 with equipment.

Superintendent, Pipestone Indian School, Pipestone, Minn., asks bids until Aug. 3 for water-softening equipment.

City Council, Arnold, Neb., has engaged C. V. Barnhill, Federal Trust Building, Lincoln, Neb., consulting engineer, to make survey and estimates of cost for municipal electric light and power plant and distributing system.

Swift & Co., Union Stock Yards, Chicago, have asked bids on general contract for one-story parking plant, 76 x 200 ft., at Spencer, Iowa. Cost about \$40,000 with equipment.

City Council, Bemidji, Minn., plans installation of tanks, pumping machinery and other equipment in new sewage disposal plant. Cost about \$100,000. Special election will soon be held to vote bonds in amount noted.

Universal Parts Mfg. Co., 1434 South Michigan Avenue, Chicago, has been organized by Barney Greweig and Sidney D. Abelson to manufacture automobile parts and equipment.

Kimberly-Clark Corp., 128 North Commercial Street, Neenah, Wis., has plans for alterations and replacements in its acid plant at Kimberly, Wis. Cost about \$100,000.

## ◀ SOUTHWEST ▶

Elliott Frog & Switch Co., 301 South Main Street, East St. Louis, Ill., a subsidiary of Ramapo Ajax Corp., 230 Park Avenue, New York, has awarded general contract to Missouri Bridge & Iron Co., St. Louis, for one-story plant, 44 x 238 ft. Cost over \$65,000 with equipment. A. F. Huber is company engineer.

Skrainka Construction Co., Security Building, St. Louis, is planning purchase of equipment for a bulk cement plant, including hoppers with weighing batchers, mixing equipment, etc.

Municipal Airport Department, Topeka, Kan., W. R. Welch, manager, is considering erection of one-story mechanical and reconditioning shop at municipal airport.

Woods-Evertz Stove Co., Springfield, Mo., will resume production Aug. 1, following shutdown for several weeks.

Current River Power Co., Doniphan, Mo., H. A. Tanner and E. B. Johnston, Doniphan, heads, has surveys under way for hydroelectric power project on Current River, near Doniphan. Company has three power sites, known as Hargus Eddy, Mill Creek and Blair Creek, and plans power dam and generating stations with capacity of 26,000 hp. Project will include transmission line. Cost over \$250,000. James Wilcox is company engineer.

Board of Education, 7539 Manchester Avenue, Maplewood, Mo., is considering manual training department in four-story addition to high school, for which bids will soon be asked on general contract. Cost over \$100,000. William B. Ittner, Continental Life Building, St. Louis, is architect.

George F. Dickey, Union National Bank Building, Wichita, Kan., is at head of project to build an oil refining and processing plant at McPherson, Kan. Cost about \$50,000 with equipment. Roy Miller, address noted, is superintendent in charge.

Security Wire Products Co., Inc., St. Louis, has been organized by H. Magidson, 2714 South Second Street, and associates to manufacture wire goods.

City Council, Sulphur Springs, Tex., is considering a municipal electric light and power plant. Cost over \$75,000 with equipment. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is consulting engineer.



L. R. Hagy and Stanley Marsh, Amarillo, Tex., have secured permission to erect a gas-line stripping plant in West Panhandle oil field district, using natural gas from wells in that district. Initial plant will cost close to \$10,000 with equipment.

Globe Oil & Refining Co., Blackwell, Okla., has plans for new oil refinery at McPherson, Kan. Cost over \$150,000 with machinery. Francis L. Jehle is vice-president and general manager.

## ◀ CENTRAL DISTRICT ▶

Canfield Oil Co., Fourth Avenue, Coraopolis, Pa., plans installation of conveyor and other mechanical handling equipment in two-story storage and distributing plant now under way.

Pittsburgh Plate Glass Co., Pittsburgh, will reopen plant at Ford City, Pa., early next month, following shutdown for several weeks, giving employment to large working quota.

Jamison Coal & Coke Co., Hannastown, Pa., will establish new central power plant on local site for furnishing electric power to mines and for commercial service at Crabtree, Luxor, Hannastown and Forbes Road. New station will be steam-operated, utilizing coal waste from company mines for fuel. Plant will be ready for operation during September. Cost over \$65,000.

Westinghouse Electric & Mfg. Co., East Pittsburgh, will increase production schedule in refrigerator manufacturing division, particularly for new line of electric-operated commercial refrigerator units, refrigerating cabinets, milk coolers, etc., recently designed.

Board of Education, Warren Consolidated Village School District, Tiltonville, Ohio, asks bids until Aug. 4 for equipment for vocational trades department and laboratory in new high school. F. S. Rusk, 35 East Main Street, Columbus, Ohio, is architect.

Perfection Bed Spring Co., Mansfield, Ohio, has been organized by B. F. Lindsley and J. E. Lautsbaugh, R. F. D. No. 7, Mansfield, to manufacture bed springs and kindred wire goods.

Mazda Lamp Co., Youngstown, Ohio, manufacturer of electric lamps, has resumed operations on basis of about 70 per cent capacity, following curtailment for few weeks, and will give employment to about 280 workers.

Smith Engineering Co., 1982 West Seventy-fourth Street, Cleveland, manufacturer of aircraft equipment, is running on a 24-hr. production schedule, with three 8-hr. shifts. Considerable part of output is given over to controllable pitch propeller for airplanes, for which company has large contracts.

Contracting Officer, Material Division, Wright Field, Dayton, Ohio, asks bids until Aug. 3 for 200 engine heaters, 200 heater flanges and 200 heater tees (Circular 10); until Aug. 8 for 230 radio antenna supports, 230 radio mounting brackets, 300 radio fixed antenna, 230 radio mounting base bracket assemblies and 230 radio tuning unit clamps (Circular 13); until Aug. 15 for 304 propeller hub assemblies (Circular 12).

Board of Education, Hamilton, Ohio, Charles Holdefer, clerk, plans installation of manual training equipment in new three-story and basement junior high school. Cost \$400,000. Bids recently received on general contract have been rejected and new bids will be asked at once. Fred G. Mueller, Rentschler Building, and George E. Barkman, Third and High Streets, are associated architects.

India Tire & Rubber Co., Akron, Ohio, is running on 24-hr. production schedule, 7-day week, with four 6-hr. day shifts, giving employment to full working quota.

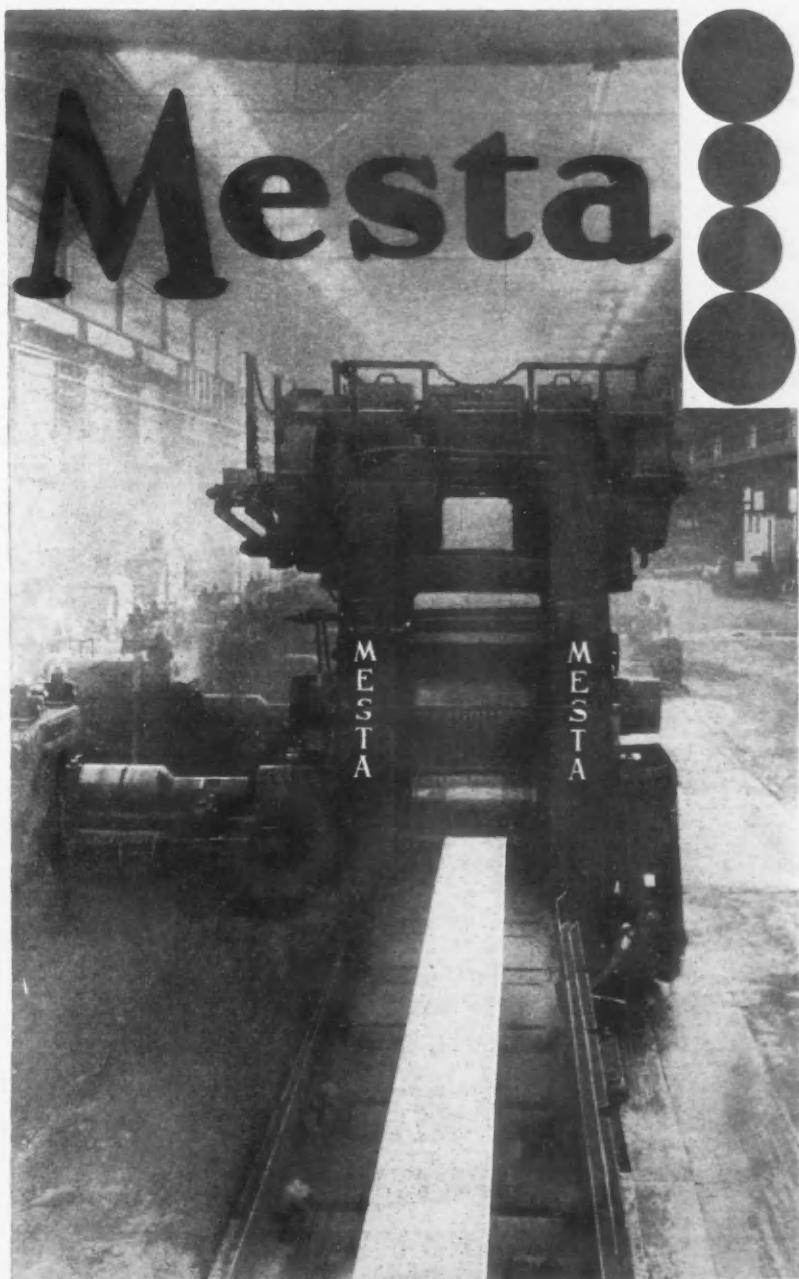
Waco Aircraft Co., Troy, Ohio, will increase production schedule, following receipt of contract from Government of Brazil for 15 army planes, totaling about \$200,000. Orders for plane units in current month cover 31, compared with 15 airplanes in July, 1931.

Board of Education, High School Building, St. Bernard, Ohio, asks bids until Aug. 6 for boilers, stokers, engine, mechanical fan, soot blowers and other power equipment. James K. Branson, Union Trust Building, Cincinnati, is consulting engineer.

Dura Co., 4500 Detroit Street, Toledo, Ohio, manufacturer of automobile hardware, is increasing production and has added about 50 men to force, making present working quota of 310 persons.

Cummins Engine Co., Columbus, Ind., has awarded general contract to Dunlap & Co., Columbus, for one-story and basement addition, 190 x 200 ft., for production of new Diesel oil-burning motor truck engine, recently perfected by company, including parts manufacture and assembling. Cost over \$100,000.





# 4 HIGH CONTINUOUS HOT STRIP MILLS

are designed and built complete, with auxiliary equipment, by MESTA in the largest unit plant in the world producing rolling mill equipment.

These mills roll strip steel of uniform gauge and finest quality, at high speed, resulting in large tonnage and low operating costs.

**MESTA MACHINE CO.**  
**PITTSBURGH, PA**



with equipment. Foster Engineering Service, Indiana Pythian Building, Indianapolis, is architect and engineer.

Vincennes Steel Corp., Vincennes, Ind., has been organized by F. L. and J. E. Oliphant and J. L. Riddle, Vincennes, capital of \$250,000, to operate a general steel and iron works, including structural steel.

Auburn Automobile Co., Auburn, Ind., is advancing production and establishing new high output records. Entire plant is now running close to capacity. Shipments last month exceeded those for any June in history of company.

Board of Public Works, East Chicago, Ind., plans installation of tanks, power equipment, pumping and other machinery in new municipal sewage disposal plant. Cost about \$1,000,000. Bids scheduled to be asked soon. Consoer, Older & Quinlan, Inc., 205 West Wacker Drive, Chicago, is consulting engineer.

Wayne Welding Co., Inc., Fort Wayne, Ind., has changed name to Wayne Welding & Supply Co., Inc.

Jaeger Motor Car Co., Belleville, near Wayne, Mich., recently organized by H. H. Day, 45132 Van Born Road, Wayne, and associates, is establishing a new plant at Belleville for production of an assembled automobile, purchasing parts, chassis, engine and other equipment from outside manufacturers. New car will be of popular price type and large assembling department for mass production is planned. Mr. Day will be general manager.

Tungsten Widia Tool Corp. of America, Inc., 333 West Fifty-second Street, New York, a subsidiary of Union Wire Die Corp., same address, has established a branch plant at 259 Vinewood Avenue, Detroit, for manufacture of hard tungsten steel cutting tools. H. H. Clark, treasurer and general manager, will be in charge.

Allied Steel Products Corp., General Motors Building, Detroit, has been organized by M. G. Vivian, 509 Oak Street, and associates to manufacture lock washers, reamers and other cutting tools, metal stampings, etc.

Ford Motor Co., Dearborn, Mich., is running at capacity at branch plant, Northville, Mich., for production of valves and kindred products, operating three shifts daily with employment of about 200 men.

McCord Radiator & Mfg. Co., 2587 East Grand Boulevard, Detroit, manufacturer of automobile radiators, heat transfer products, etc., has developed a new air-conditioning unit for cooling, heating and dehumidifying, and will give over part of plant to new line, with facilities for parts manufacture and assembling.

Wilcox-Rich Corp., Marshall, Mich., manufacturer of valves and kindred automotive specialties, is advancing plant operations and now giving employment to about 400 men.

Abar Metal Products, Inc., recently organized, has taken over equipment of Barsteel Products Co. and is operating at 111 Power Avenue, Cleveland, manufacturing automatic screw machine products and metal specialties.

## ◀ SOUTH ATLANTIC ▶

Potomac Electric Power Co., Washington, has started work on new steam-operated electric power plant at Buzzard's Point to have initial capacity of 44,300 hp. Station is expected to be completed in about 15 months and will cost about \$4,000,000 with transmission lines, switching stations and other auxiliary structures. Stone & Webster Engineering Corp., Boston, is engineer. Potomac company has closed agreement with Safe Harbor Water Power Corp., Baltimore, for supply of power from new hydroelectric generating plant recently completed at Safe Harbor. Steel tower transmission line will be built from point near Ellieott City, Md., to connection with Potomac system, with switching station in Howard County, Md., and new 100,000-hp. transformer plant at another point of route. Latter project will cost over \$250,000.

Purchasing and Contracting Officer, Quartermaster Corps, Holabird Quartermaster Depot, Baltimore, asks bids until Aug. 1 for automobile rims, wheels, pressure gages, fittings, bushings, brackets, etc. (Circular 4).

Victory Oil Co., 738 Fourth Avenue, Huntington, W. Va., recently organized by H. H. Rosen and associates, has leased property at Kenova, W. Va., and plans new bulk oil storage and distributing plant. Cost over \$30,000 with equipment.

Board of District Commissioners, District Building, Washington, asks bids until Aug. 8 for 200 cast iron fire hydrants.

Southern Battery & Electric Corp., Apomattox, Va., plant and equipment, will be

offered for sale Aug. 6 by F. C. Dresser, receiver.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 2 for lighting and power cable (Schedule 8427) for Norfolk Navy Yard; one gasoline-operated industrial truck and four 2-ton capacity trailers (Schedule 8411), one motor-operated hydraulic hoist (Schedule 8432) for Sewall's Point Navy Yard; until Aug. 9 for one motor-driven bench shearing machine (Schedule 8423), one 25-ton capacity arbor press (Schedule 8424) for New York or San Francisco Navy Yards; four ventilating fans, four controllers and spare parts (Schedule 8428) for Eastern and Western yards; until Aug. 16 for spot lights (Schedule 8437) for New York, Philadelphia, Sewall's Point and San Diego navy yards; gate valves (Schedule 8413) for Eastern and Western yards; 35,000 practice bombs for Portsmouth, N. H., and 50,000 such bombs for Mare Island navy yards (Schedule 844); until Aug. 23 for one sandblast room equipment (Schedule 8441) for Sewall's Point Navy Yard.

James River Hydrate & Supply Co., Indian Rock, Va., recently organized by L. P. Dillon, Indian Rock, and associates, capital \$200,000, plans establishment of plant at local limestone properties.

## ◀ FOREIGN ▶

Ministry of Interior, Cairo, Egypt, asks bids until Aug. 30 for equipment for water supply system, including valves, hydrants, cast iron pipe, etc.

Kurashiki Silk Weaving Co., Tokyo, Japan, and affiliated interests are planning erection of new rayon mill, with power house, pumping station and other mechanical divisions. Cost about 2,500,000 yen (\$700,000). New company will be organized to carry out project, with capital of 10,000,000 yen (about \$2,800,000).

Ministry of Interior, Lima, Peru, plans erection of Government-owned oil refinery, including division for production of gasoline. Project will include bulk oil storage and distributing plants in different localities. Peruvian Congress is considering law for creating such Government monopoly.

City Clerk, Sydney, Australia, asks bids until Oct. 17 for four 9000-kva. oil-immersed electric transformers with auxiliary equipment for Pyrmont power plant.

Ministry of Marine, Rio de Janeiro, Brazil, is planning modernization of naval craft at cost of about \$42,500,000 to be expended over term of years. Program will include building and equipping eight or nine torpedo boats, about six submarines, two small cruisers and several steel hull supply vessels.

Ministry of Communications, Peking, China, has arranged with China Electric Co., Shanghai, a subsidiary of International Telephone & Telegraph Corp., New York, for construction of four large radio telephone transmitting and receiving stations, with steel towers, power stations, etc., one to be located at Shanghai and other three in important cities of country. An international radio telephone station will also be built at Shanghai for connection with all parts of China.

## ◀ PACIFIC COAST ▶

Board of Regents, University of California, 405 Hilgard Avenue, Los Angeles, asks bids until Aug. 4 for steel lockers and shelving. Specifications at office of comptroller, Library Building, campus.

San Luis Obispo County Supervisors, San Luis Obispo, Cal., asks bids until Aug. 1 for installation of waterworks in County Water District No. 3, Cambria district, including pumping plant and other mechanical equipment, pipe lines, etc.

Board of City Trustees, Gridley, Cal., is considering installation of a municipal electric lighting plant, using Diesel engine units.

Pacific Saline Chemical Co., Edmonds, Wash., care of J. A. Kennedy, Edmonds, manufacturer of industrial chemicals, has acquired former property on Richmond Beach waterfront for new plant for grinding and treating chemical deposits secured from dry beds of lake territory in Eastern part of State. Cost over \$50,000 with machinery.

National Guard, 116th Squadron, Spokane, Wash., plans rebuilding aircraft hangar at Felts Field, near Spokane, with repair and reconditioning shop, recently destroyed by fire. Loss about \$40,000 with equipment.

Fred W. Fein Co., Bremerton, Wash., has been organized by Fred W. and Samuel F. Fein to take over and expand company of

same name at 217 Second Street, manufacturer of electrical appliances and equipment.

Utah Copper Co., Salt Lake City, Utah, has resumed operations at mining properties at Bingham, and smelting plant at Garfield, Utah, following curtailment for several weeks, giving employment to about 1500 men.

City Clerk, City Hall, Stockton, Cal., asks bids until Aug. 1 for equipment for Stockton Deep Water Project, including locomotive crane, three lumber carriers, portable conveyor or elevator and two lift trucks; also for one 100,000-gal. steel water tank on 144-ft. steel tower. Bids will be asked for another tank unit later. Col. B. C. Allin is city port director in charge.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 9 for four motor-driven engine lathes (Schedule 8412), 60 pneumatic scaling hammers (Schedule 8410), five power-driven sounding machines and spare parts (Schedule 8438), rectifier vacuum tubes (Schedule 8426); until Aug. 16 for 44,000 practice bomb signals (Schedule 8435), all for Mare Island Navy Yard.

Acme Battery, Inc., Los Angeles, care of George Appell, Garfield Building, has been organized by Earl D. Fisher and Nathan C. Blacher to manufacture electric storage batteries and equipment.

## Trade Notes

Keystone Steel & Wire Co., Peoria, Ill., has purchased the plants and assets of Mattson Wire Mfg. Co., Joliet, Ill. The Mattson company has plants at Joliet, Albany, N. Y., and Minneapolis, and uses large quantities of galvanized wire for the production of snow fences.

Labelle Nickel & Garnet Co., Ltd., 354 St. Catharine Street East, Montreal, Que., will start work immediately on the erection of a refinery plant at Ville Lasalle, Que., to cost \$150,000. Prices are asked on galvanized sheets. J. J. Crawford is designing engineer.

Lake Superior Iron Ore Association has moved its office from the Union Trust Building to 3100 East Forty-fifth Street, Cleveland.

Metafiltration Co., Ltd., London, England, recently organized, will take over and expand Metafilters, Ltd., London, manufacturer of filter equipment and other mechanical products. T. H. Minshall and A. W. Steed, St. Michael's Rectory, Cornhill, London, head new company.

A loss of \$775,066.95 is reported by the United States Pipe & Foundry Co. for the first six months of 1932. In the corresponding period of 1931 there was a net profit of \$913,954.03. The loss this year is made up of \$173,943.56 in operations and \$177,126.15 in the sale of bonds, on top of which \$423,997.24 had to be added for depreciation.

## New Trade Publications

American Rolling Mill Company have issued Armo Architectural Bulletin No. 9 entitled "Uses of Plate Metal in Mechanical Equipment." Contents describes application of plate metal in connection with the power plant equipment of the Cincinnati & Suburban Bell Telephone Company's new building in Cincinnati.

Self-locking Screw Threads. — Dardet Threadlock Corp., 120 Broadway, New York. Pamphlet of 32 pp., handsomely illustrated, to show how threaded fastenings under the invention remain tight without lock washers, jam nuts, cotter pins or other auxiliary locking devices. Emphasis is made of the universal application of the system to all kinds of bolts and nuts, set screws and the like.

Grinding Wheels.—E. C. Atkins & Co., Indianapolis, Ind. Revised 32-page booklet gives information on abrasives and bonding processes in the manufacture of Aerolite and Ferrolite wheels. Contains standard grading lists and illustrates shapes of wheel faces; Bakelite bonded wheels also featured.

Motors.—Wagner Electric Corp., St. Louis. Bulletin 174, part 5, pages 13 to 18, devoted to multi-speed squirrel-cage motors. Installations are described and illustrated.

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## Straight-Line Production of Refrigerator Cabinets

(Concluded from Page 136)

sembly room are loaded on flat steel plates on which they are pushed on these tracks across to the assembly line. Adjoining these tracks along the assembly line is a transfer conveyor consisting of a platform in which balls are mounted, providing a convenient roller conveyor for moving alongside of the assembly line material loaded on the steel plate carriers.

With the assembling completed, the cabinet is inspected for finish and workmanship, then placed on a roller conveyor for crating and sent down a conveyor to the shipping room.

Efficient manufacturing processes are provided on the first floor where the food compartments and other cabinet parts that are vitreous-enameled are made. After a sheet for the food compartment is cut to size and punched, the piece is folded on a brake in a rectangular form with one open side, which becomes the front. The folded piece is then clamped in a welding fixture and the tops and bottoms are butt-welded to the sides with acetylene gas torches.

A rather unusual and efficient fixture has been designed for this job. This has two heads for holding the end pieces during welding. An end piece is set on a stationary head over which it fits closely and then the upper head that is attached to arms actuated by an air cylinder is pressed down on the piece thus drawing the edges of the end and side pieces in tight contact. A groove around the edge of the stationary head where the edges meet prevents buckling during welding. While the edges are in tight contact the pieces are fuse-welded together almost entirely without the use of welding wire. There are four of these welding units, two being connected together back to back. After this welding the pieces are set on a roller conveyor and move to tables for finishing operations.

### Cleaning and Enameling of Parts

The pieces then are cleaned, pickled and neutralized in a conveyor-type pickling machine. They are hung on racks, on which they are carried through the tanks, including rinsing tanks between operations. After neutralizing, they move through a drying oven which is a part of the pickling machine. It takes 40 min. for work to go through the machine. Legs that are porcelain-enameled are also pickled in this machine.

After pickling, the pieces are sand-blasted inside, principally to provide a smooth surface in the corners and in the welds before enameling, which follows.

The ground coat is dipped on and this is followed by the spraying of

two white coats on the inside. The piece, after dipping, is hung on a chain-type overhead conveyor on which it passes through an oven where it is dried at a temperature of about 300 deg. F. From this it is transferred to another conveyor which carries it through an electric burning furnace about 45 ft. long. This conveyor loops through a horseshoe-shaped heating chamber in the rear of the furnace and returns to the loading end, where the piece is put back on the conveyor that brought it from the dipping tank. The latter conveyor takes the work through the spray booth, then again through the drying oven and back through the burning furnace, following the same procedure as that for the ground coat. These operations are repeated for the second white coat.

Spraying is done in a partly inclosed booth about 50 ft. long which has openings at the side and ends for the entrance of employees and the conveyor. The work is sprayed while moving through the booth on the conveyor and as many as six men may be employed in spraying, there being a separate spray tank for that number of employees. Enamel dust is drawn from the booth by a suction system through holes in the back of the booth. A fan system delivers clean air back into the room in the same volume as it is drawn from the booth. After the second burning, the food compartments are inspected and sent to the assembly floor.

## Methods of Decorating Rustless Steel

(Concluded from page 138)

way an attractive appearing panel is produced without etching and without the use of lacquer that is required for colorful designs. This process has been patented by United Metal Products Co.

Plating rustless steel with copper or bronze has been successfully accomplished in the company's laboratories, and this development, when commercially applied, promises to permit new artistic effects for the metal decorating industry in that by using the process bronze or copper may be inlaid on high nickel-chrome alloy steel.

The difficulty met in having a good electro-deposit adhere to rustless steel is due to the passivity caused by the chromium content. This difficulty is avoided by making the surface to be plated active by the use for a few minutes of a reverse current in the hydrochloric acid solution, after

which the work is reversed and passed into the plating solution. The main problem in successfully plating rustless steel in copper or bronze is to provide a coating or resistance with which the portion of the surface that is not to be etched and plated is covered, that will withstand the etching process, the reversing current and the plating solution.

The first step in the electro-plating is etching the design. In doing this the standard etching methods are followed except that instead of the use of hydrochloric acid alone the reagent is composed of that acid combined with iron chloride and nitric acid. The figures are etched to a depth of 0.002 to 0.003 in.

After the piece is etched it is used as an anode in a 5 per cent hydrochloric acid solution and the current is reversed. This operation is to remove the chromium from the etched surface so that the plating will adhere to the steel. The etched surface is then plated in a copper cyanide bath, the usual electric plating process being followed. Final operations are removing the resistance from the unplated surface and cleaning and polishing. The United Metal Products Co. has patents pending on this later process.

## Oil-Electric Locomotives in Switching Work

(Concluded from page 142)

cylinder liner, piston and ring replacement, and this takes but a few days and costs only a few hundred dollars. As a result, the regular maintenance force was reduced to one man.

A year's experience with this first oil-electric locomotive resulted in the addition of a heavier 70-ton, 400-hp. locomotive in January, 1930, and a similar unit in April, 1931. These three replaced the entire steam locomotive fleet of five, except that one steamer was kept in stand-by service. It was unnecessary to keep this engine under fire, for the three oil-electric engines showed an availability factor of 98 per cent, comparing with 95 per cent for all Westinghouse oil-electric engines now in service. Inspection, fueling and major service replacements are taken care of at out-of-service periods on week-ends and holidays.

Close check is kept on this operation to determine costs. Daily operation reports are made out by the engineer and yardmaster on each engine, which show the number of hours worked, fuel and lubricating oil consumption, and any service delays or interruptions. A monthly compilation of these records is used in making up monthly cost sheets, as shown in the accompanying table, which indicate in detail the cost per hour of operation. During the entire year 1931 the three oil-electric locomotives in the West-

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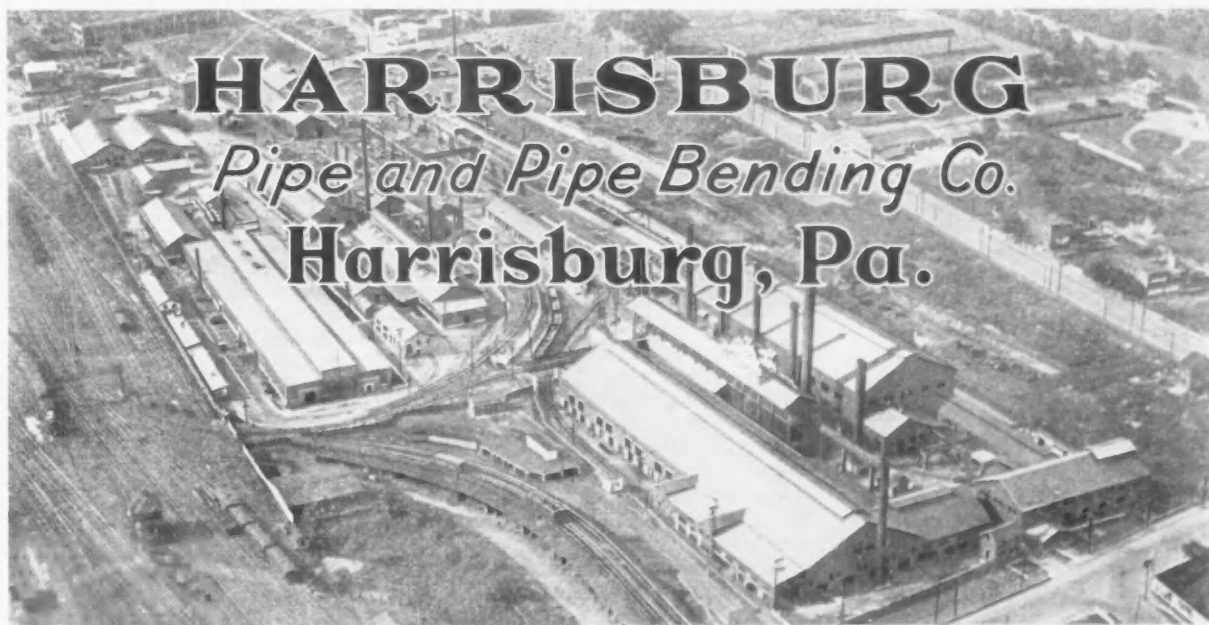
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Every production operation is Harrisburg controlled. The dependability of Harrisburg products is assured through our own careful supervision of every process . . . from the open hearth steel produced in our own furnaces, through the rolling, forging and finishing in our own mills and shops.



**HARRISBURG**  
*Pipe and Pipe Bending Co.*  
**Harrisburg, Pa.**

SALES AGENTS: Mead & Mason, 160 North La Salle St., Chicago, Ill. . . . W. P. Paul Co., Drexel Bldg., Philadelphia . . . W. R. McDonough Co., National Bldg., Cleveland . . . Rolph Mills & Co., 525 Market St., San Francisco . . . Mid-Continent Supply Co., Fort Worth.

CYLINDER SALES AGENTS: Joseph A. Janney, Jr., Morris Bldg., Philadelphia . . . Charles L. Gulick, 110 E. 42nd St., New York City . . . A. W. V. Johnson, Merchants Exchange Bldg., San Francisco . . . The Corbett Corporation, Sawyer & Winter Sts., Houston.

inghouse plant were operated a total of 8689 hours at a total cost of \$28,832.23, an average cost per hour of \$3.22. The works records showed the cost per hour of operation of steam locomotives in 1930 to have been \$7.23, which would have amounted to a total cost of \$62,821.47 for the hours worked in 1931. Oil-electric locomotive operation therefore saved the company \$33,989.24 during the year and the saving per hour of engine operation was \$3.91.

This savings on handling costs justifies the installation and confirms the studies which were made prior to the purchase of the locomotives. Other

favorable factors, which perhaps cannot be measured in dollars, but are of importance in yard railroad operation, were emphasized. The engines are safer from the operating standpoint and in fire hazard. They are clean and are easier to keep in good condition. They are faster in pickup, allowing more shifting work than a steamer. Their truck type construction allows them to negotiate bad curves with less chance of derailment than the ordinary six-wheel steam shifter. During 1931 there was but one oil-electric engine derailment, and that was due to soft ground and spreading rails.

## Special Furnace Bright-Anneals Copper Wire

(Concluded from page 143)

filled with copper wire could be wheeled into and out of the annealing chamber on a standard lift truck from floor level, thereby eliminating the necessity for cranes, hoists and the like, together with considerable rehandling. Another advantage over other furnaces is that the treated material can be cooled or quenched without the use of a tank or auxiliary cooling chamber. In fact, the material is removed from the furnace as a finished product, quenched, dry, annealed and clean.

The annealing chamber and gas-fired steam superheater, comprising the two most essential parts of the furnace, are built together so as to eliminate pipe connections and to increase the thermal efficiency. The top wall of the annealing chamber constitutes the bottom wall of the superheating chamber. The gas-fired superheater comprises a rectangular flow chamber coextensive in length and width with the annealing chamber. The rear end wall of the superheater is formed along its upper edge by a rectangular transverse inlet duct which is vertically aligned with the periphery of a power-driven exhaustor. A number of horizontal baffle plates extend longitudinally through the superheating chamber, forming a tortuous passage for the steam. Gas-fired immersion heaters are employed in the superheater. Gas burners of the proportional gas and air mixer type fire into tubular refractory-lined combustion chambers, discharging into tortuous heating tubes arranged so that the products of combustion counter-flow the superheated steam.

The gas is fired "full muffle" and the products of combustion are eventually vented to the atmosphere. The superheater is connected with the annealing chamber through a number of transversely aligned openings in the front end of the top plate of the rectangular annealing chamber. The rear end wall of this annealing chamber is formed with a short duct designing a discharge passage connect-

ing with the intake of the exhaustor. The periphery of this exhaustor connects with a vertical discharge duct into which is connected a horizontal sleeve leading to a weight-loaded flap valve discharging to the atmosphere. This vertical duct in alignment with the periphery of the exhaustor is further provided with a butterfly valve introduced above the horizontal sleeve which connects with the flap valve. When this butterfly valve is open, steam is recirculated from the annealing chamber under the propulsion of the exhaustor and driven through the superheater and back through the annealing chamber. The furnace is heavily lagged with insulation and sheet metal.

In operation this furnace will anneal indiscriminately copper wires of various sizes and weights, on spools of the same size or different sizes, at the same time. Also, the wire is annealed on the same spool on which it is cold-drawn and from which it is later unspooled for stranding. When the furnace is loaded the burners are ignited and the exhaust fan started with the butterfly valve closed, so that the steam, drawn from the plant's steam lines, after circulating through the superheater and annealing chamber, respectively, is exhausted to the atmosphere, thus purging the system of air. The butterfly valve is then opened and the steam caused to recirculate through the system, joining with any new steam from the plant's steam lines, and is obviously reheated in the course of its return flow. A small amount of steam does escape past the weight-loaded flap valve, which acts in the capacity of a weighted pressure relief valve. The pressure within the annealer is only slightly above atmospheric pressure to prevent infiltration of air.

The use of superheated steam as a heating medium and its circulation through the system at a very high velocity makes it possible to maintain high temperatures without entraining a large volume of heat. This affords a

sensitive control over a wide range of the rate at which the work is heated. The superheated steam permeates all the interstices of the work due to the high velocity, thus resulting in obtaining substantially the same temperature throughout the entire mass in the furnace.

The temperature is caused to rise gradually to the desired point (525 deg. F.) under automatic pyrometric control. After the product is annealed, without any soaking period, the gas burners are extinguished and water is injected into the steam passage, thus cooling the chamber and quenching the work with the latent heat of vaporization of the water introduced with the steam. Thus the product is quenched within the furnace without the use of a tank and is then removed in a clean dry state. In general, the product—copper wire—is clean, dry, uniformly soft and ductile, free from water discoloration and oxidation and has a bright finish. Copper will oxidize in air at temperatures down to 160 deg. F., and even slowly at room temperatures. If unusual requirements necessitate it, the system may be operated under vacuum until the product is cooled below 160 deg. F. The thermal efficiency of the furnace is high, the heat penetrates uniformly to all parts of the product and is readily controlled, and the operation is carried out with a minimum handling of the product.

In this new gas-fired convection-heating annealer the item of "control" is primarily vested in a temperature recorder controller with the elimination of 80 per cent of the interlocking factors incident to the operation of a radiant-heat annealer.

Very important are the factors pertaining to spool sizes in a radiant heat type of furnace and even when like gage sizes are treated on similar spools, the outer layers of wire take a higher temperature than the innermost layers, resulting in non-uniformity. In the case of the gas-fired convection annealer the maximum rate of temperature rise can be and is limited to the speed at which the heat will uniformly penetrate the spools of wire, so that all of the wire reaches an annealing temperature within the space of a very few minutes. This precludes the possibility of "stickiness" brought on by prolonged soaking of any part of the spool at temperatures above which molecular intergrowth between adjacent strands of wire is likely to occur. Elimination of the factors which are liable to produce stickiness has permitted the Diamond Braiding Mills to use much larger spool sizes for a given gage size than have been successfully employed in other annealers. Specifically the gas-fired convection-heating annealer has demonstrated its ability to handle different gages of fine wire on spools ranging from 5 to 65 lb. in weight, in the same charge subject to the same annealing cycle. Heavy copper wire up to No. 8 in loose bundles has been placed in this furnace with No. 36 gage on 10-lb. spools.



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